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3-D Geocellular Model Of The Duperow Formation In Southwestern North Dakota

Kyle D. Shurtliff

3-D GEOCELLULAR MODEL OF THE DUPEROW FORMATION IN SOUTHWESTERN NORTH DAKOTA

by

Kyle D. Shurtliff
Bachelor of Science in Geology, Brigham Young University-Idaho, 2012

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This thesis, submitted by Kyle D. Shurtliff in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

Richard D. LeFever, Chairperson

Nels Forsman

William Gosnold

This thesis is being submitted by the appointed advisory committee as having met all of the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.

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Kyle D. Shurtliff

December 20, 2015

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ABSTRACT

The Duperow Formation of southwestern North Dakota is Devonian in age, and forms the lower part of the Jefferson Group within the Kaskaskia Sequence. This shallow marine shelf deposit is a cyclical carbonate evaporite, and is comprised of dolomitic mudstones, gypsum, multiple bioclastic wackestones/packstones, stromatoporoid boundstone and anhydrite.

There is a long history of oil production in this formation dating back to the 1950's in North Dakota. By 1989, the Duperow Formation was the second most prolific hydrocarbon producer on the Billings Anticline in North Dakota, and therefore was studied extensively. Environmental factors during deposition as well as diagenetic processes after deposition allowed for hydrocarbon accumulation in pore spaces. As technology advanced and unconventional plays developed, small pay and traditional reservoirs, like the Duperow, were not as profitable, and because of that very little research was done on the Duperow in North Dakota 1989.

The well-established cycles of the lower Duperow Formation allow for correlation of wells and cycles across the basin. Two of these cycles at the base of the Duperow have enhanced porosity and definite permeability in locations where dolomitization has occurred and stromatoporoid banks accumulated. Dolomitization of limestone increase the porosity of the rock as the dolomite crystals take their shape as rhombohedrals. Stromatoporoid banks keep some of its pore space and permeability as it is fossilized

making it suitable to be a reservoir. These cycles are shown to be continuous beyond the slopes of the anticline. The creation of a 3-D geocellular model shows the extent of the porosity and permeability throughout the study area.

CHAPTER I

INTRODUCTION

Geologic Setting

The Duperow Formation is part of the lower Upper Devonian (Frasnian) sediment deposited within the Williston Basin. It extends beneath the Prairie Provinces southeastward from the Canadian Rockies and arctic Canada into the transcontinental arch of the United States. Predominantly a subsurface unit, the Duperow was deposited during a period of overall marine transgression as simultaneous sedimentation occurred in the Cordilleran geosyncline, Alberta, and Williston Basins (Wilson, 1967).

The Williston Basin is an elliptical cratonic basin in North America, elongated in a northwest-southeast direction (Figure 1). It covers portions of South Dakota Montana, North Dakota, Saskatchewan and Manitoba. The basin resides between the Superior Craton, also known as the Canadian Shield, on the east, and the Wyoming Craton, also known as the Cordilleran geosyncline, to the west (LeFever, 1991). The Basin is bordered on the south by the Sioux arch, on the southwest by the Black Hills uplift and Miles City arch, and on the west by the Bowdoin dome (Gerhard et al., 1982). The formation of the basin is likely driven by structural controls which are associated with the Rocky Mountain belt. Positive structural elements include the Nesson, Cedar Creek, and Billings anticlines, which were all intermittently active throughout much of the basin's depositional history and affect the geometry of the strata deposited within the Williston Basin.

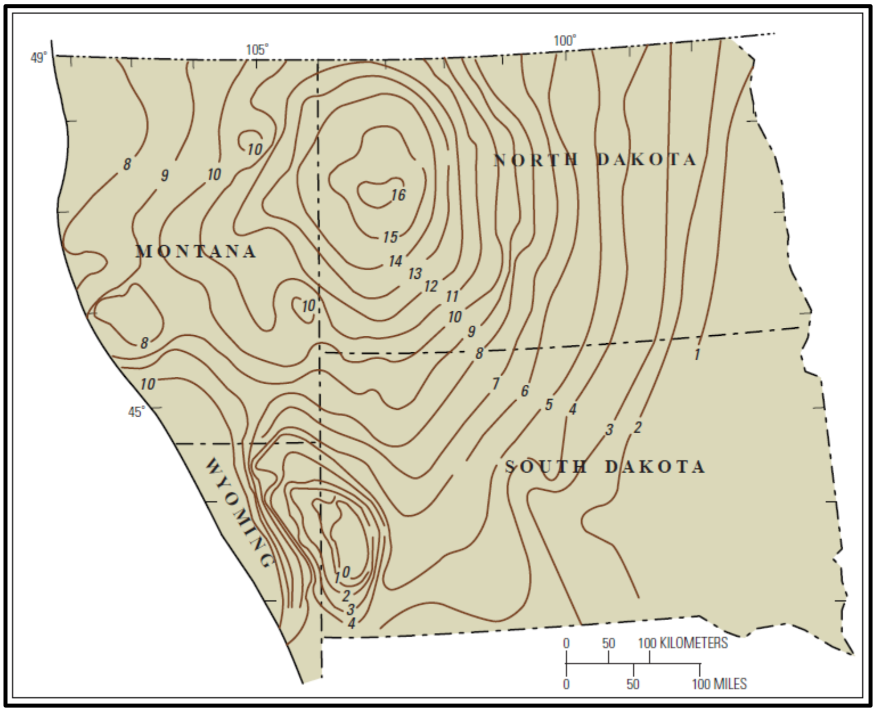

Figure 1. Map showing thickness and location of the Williston Basin. maximum thickness is more than 16,000 ft in west-central North Dakota. Contour interval is 1,000 ft. After Anna et al., 2013.

The lithologic record of the Williston Basin is composed of over 16,000 ft. of marine, non-marine, and fluvial deposits spanning six major stratigraphic sequences from the Sauk to the Tejas, (Murphy et al., 2009). Carbonate sedimentation began atop the Precambrian unconformity with the shallow marine deposits of the Deadwood Formation and continued throughout most of the Paleozoic Era. Clastic deposition began in the Late Permian with the Spearfish Formation and continued throughout the Mesozoic and Cenozoic Eras. During the Kaskaskia Sequence the overall circular shape of the basin began to change.

The Kaskaskia sequence is a second order transgressive event that started in the early Devonian and concludes a major regression at the end of the Mississippian (Figure 2).

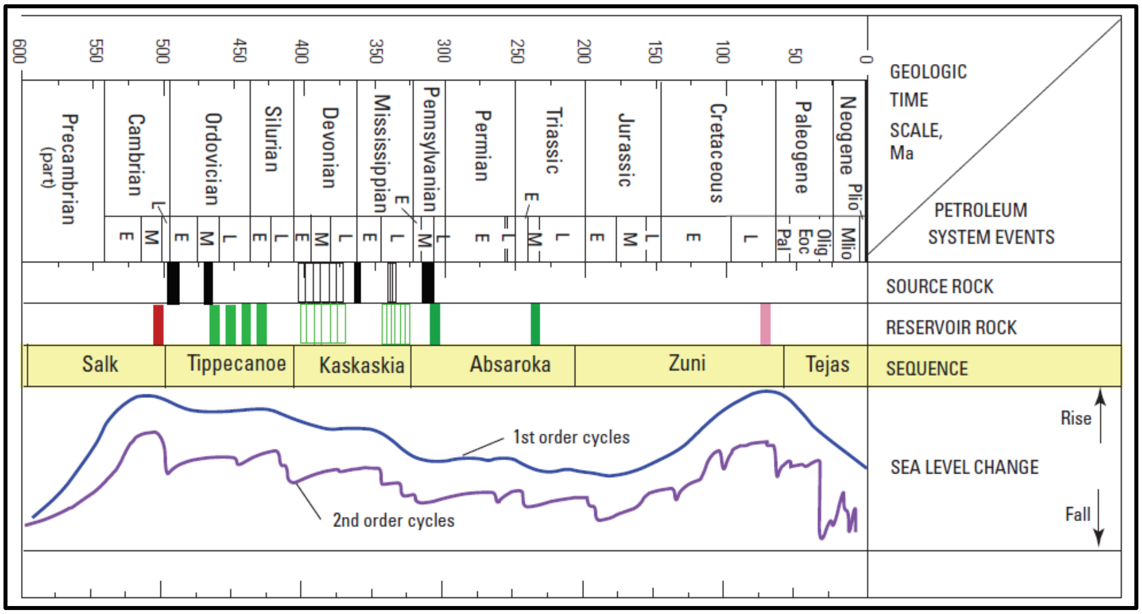

Figure 2. Showing geologic time, source rock, reservoir rock, sequences of Sloss (1984), first and second-order sea level curves. After Vail et al., 1977. In the source rock column, black bands represent significant shale deposits, thin lines are carbonate cycles. In the reservoir rock column green signifies oil and red represents gas. The thin green lines show stratigraphic position of reservoirs that may possess other entities besides oil. The blue band represents the stratigraphic position of the Duperow Formation (modified from Anna et al., 2013).

During this time, uplift of the transcontinental arch changed the basin configuration from a circular basin centered in northwestern North Dakota with a southwestern marine connection to the Cordilleran Sea, to a northwest-southeast trending elongated shelf basin that extended to the Arctic Ocean. This new configuration is called the Elk Point Basin, and it maintained marine connections to the northwest and southeast until the Early Mississippian. At that time, both first order and second order cycles reflected sea level decline. At the end of the early Mississippian there was a shift back to the circular shape of the Williston Basin, once again centered in North Dakota (Anna et al., 2013).

In the Elk Point Basin, the numerous cycles of restricted marine conditions were followed by episodes of normal circulation coupled with sea level change, giving rise to a variety of lithologic successions of limestone, dolomite and evaporite. For example, there are three second-order cycles in the Kaskaskia. The first is an initial transgression that deposited the Ashern and Winnipegosis Formations followed by the Prairie Formation, which represents a regression resulting from a major restriction at the margin of the Elk Point Basin. The second transgression reestablished normal marine circulation in the basin that resulted in the deposition of the Dawson Bay Formation. As sea level regressed, the Souris River, Duperow, Birdbear, and Three Forks Formations were deposited. The third major transgression occurred during the Late Devonian and resulted in the deposition of the Bakken Formation (Anna et al., 2013).

The Duperow Formation is primarily a mixed carbonate-evaporite unit that conformably overlies the Souris River Formation and is conformably overlain by the Birdbear Formation (Cen & Hersi, 2006). The Duperow was deposited during the Late Devonian in the southeastern Western Canada Sedimentary Basin. A back-reef inner platform setting, which lies southeast of the Leduc Reef Barrier of the Alberta Basin, is envisioned to be the environment of deposition. Preserved strata consist of thick, carbonate dominated rhythmic megasequences that indicate large scale, sea level fluctuations (Moore, 1989). The environment of deposition is conducive to a shoaling upward pattern within the shallow marine limestones, dolostones and evaporites. Sea level fluctuations contributed to development of stromatoporoid/coral carbonate banks on paleotopographic highs. These banks provided barriers to circulation of normal marine waters. Thus, bank growth along the inlets to the basin played a major role in controlling the style and sequence of carbonate/evaporite cycles that characterize the Duperow Formation (Burke & Heck 1988).

To date, hydrocarbon production from the Duperow Formation is restricted to the United States portion of the Williston Basin. Most production is from the lower Duperow except in areas of significant structural influence such as the Nesson and Cedar Creek anticlines. Duperow production on the Cedar Creek Anticline results mainly from an unconformity trap (Clement, 1986), whereas along the Nesson Anticline is mainly from fractured reservoirs. In these areas, the upper Duperow also yields significant quantities of oil (Burke & Heck 1988).

The Duperow Formation consists of numerous complete and incomplete sedimentary cycles. The most complete cycles are developed in the lower Duperow, where six cycles are generally recognized (Figure 4).

Following Wilson (1967), the cycles of the lower Duperow are numerically ordered from 1 at the bottom to 6 at the top by Pilatzke et a1. (1987). Depositional facies comprising a complete cycle begin with a suite of sublittoral facies, continues upward through perilittoral facies, and is capped by various supralittoral facies. Two models are currently used to explain the lithologic facies succession in the Duperow Formation (Burke & Heck 1988).

Ehrets and Kissling (1985) suggest that the majority of the basin was never subaerially exposed during Duperow time and that each depositional cycle records increasing salinity in the basin. Wilson and Pilatzke (1987), in contrast, suggest that the

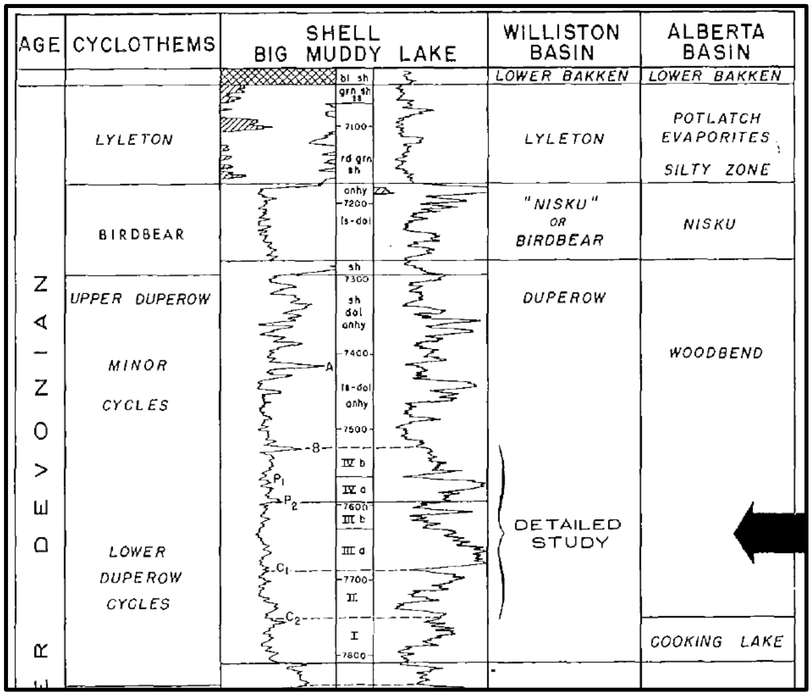

Figure 3. Generalized stratigraphic column showing the stratigraphic location and cycles of the Duperow Formation in the Williston and Alberta Basins. After Wilson 1967.

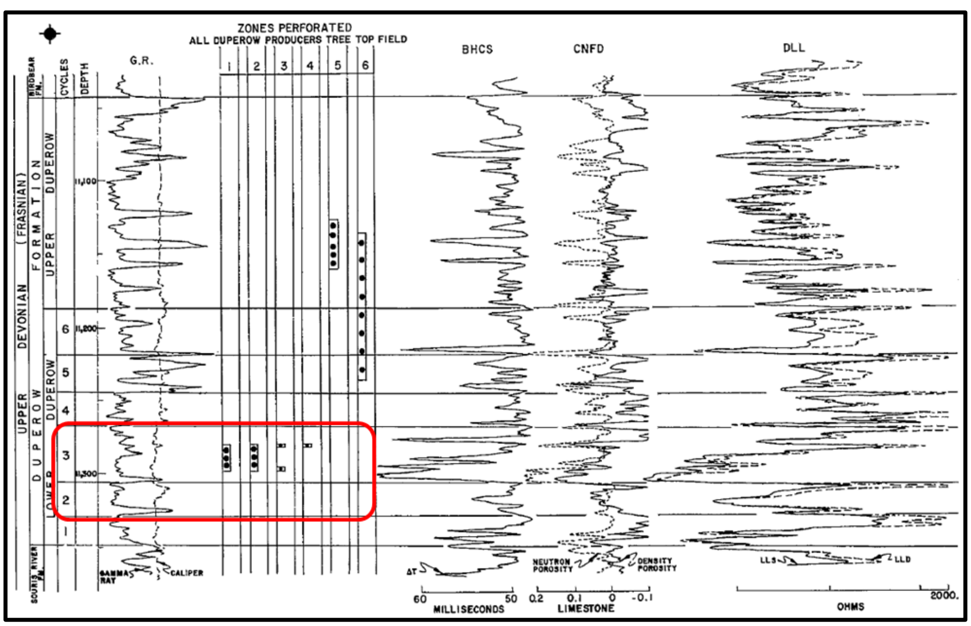

Figure 4. Duperow Formation nomenclature and characteristic log signatures on the Billings Anticline. Cycle designation follows Pilatzke et al (1987) and Wilson (1967). Red box shows the location of cores examined in this study (modified from Burke and Heck , 1988).

basin filled during periods of sabkha progradation capped by hiatuses representing periods of subaerial exposure (Burke & Heck 1988).

Previous Work

Recognition and study of the Duperow formation first began in the early 1950's. The name "Duperow" was first used by Powley (1951). Later Baillie (1953) and Sanberg and Hammond (1958) identified cyclical limestone, dolomite, and anhydrite and divided and correlated the Duperow within Saskatchewan and North Dakota. Sandberg and Hammond (1958) set forth the reference section and description for the Duperow Formation which corresponds with Baillie's (1953) four "unnamed" subdivisions of the Devonian system in the Williston Basin. Sandberg and Hammond's (1958) reference section included marker beds which consist of dolomudstone with high gamma ray kicks. Six dolomudstone marker beds were identified and subsequently used by Wilson (1967), and Kent (1968) to aid in correlation (Figure 5). Ehrets and Kissling (1985) discussed the

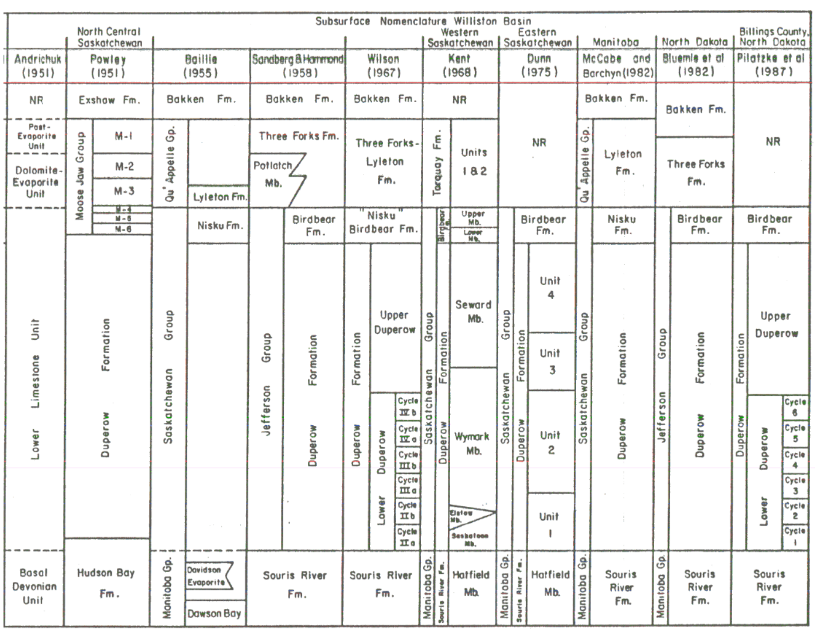

Figure 5. History of sub-surface nomenclature of the Duperow Formation and related units in the Williston Basin (modified from Burke, 1989).

cyclic nature of the Birdbear and the Duperow formations that are punctuated by more frequent shelf-wide fluctuations in salinity. Episodic, shelf-wide cycles of progressive hypersalinity most likely reflect small eustatic sea-level fluctuations. Culmination of these hypersalinity events is expressed by remarkably wide spread, thin marker beds of anhydrite and argillaceous dolomite. These are used to subdivide the Duperow stratigraphic section (Ehrets & Kissling 1985). The subdivision by Ehrets & Kissling (1985) is numbered from top to bottom (Figure 6), opposite of Wilson (1967) and Pilatzke et a1. (1987) (Figure 7).

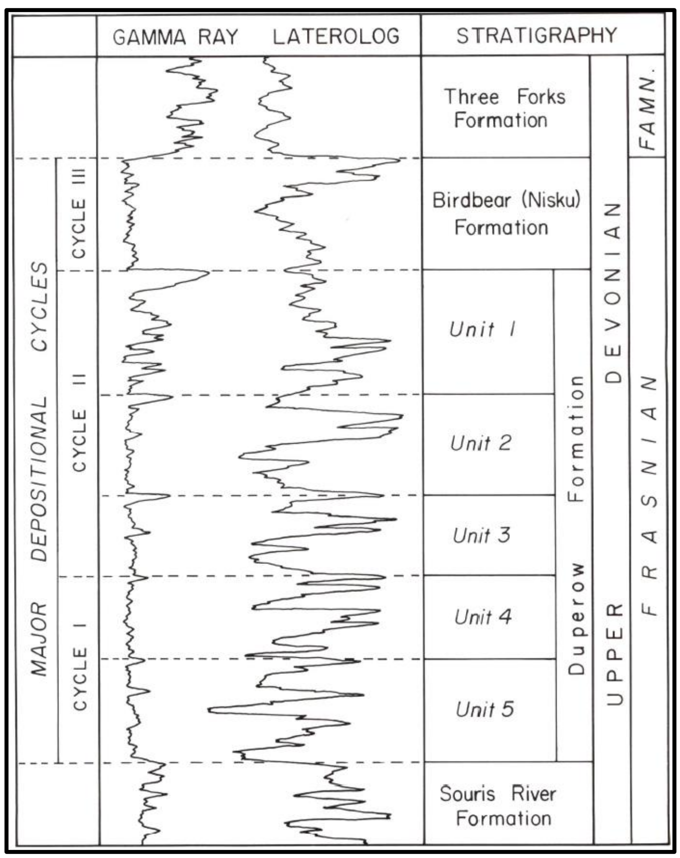

Figure 6. Stratigraphic sub-divisions of the Duperow Formation. After Ehrets & Kissling, 1985.

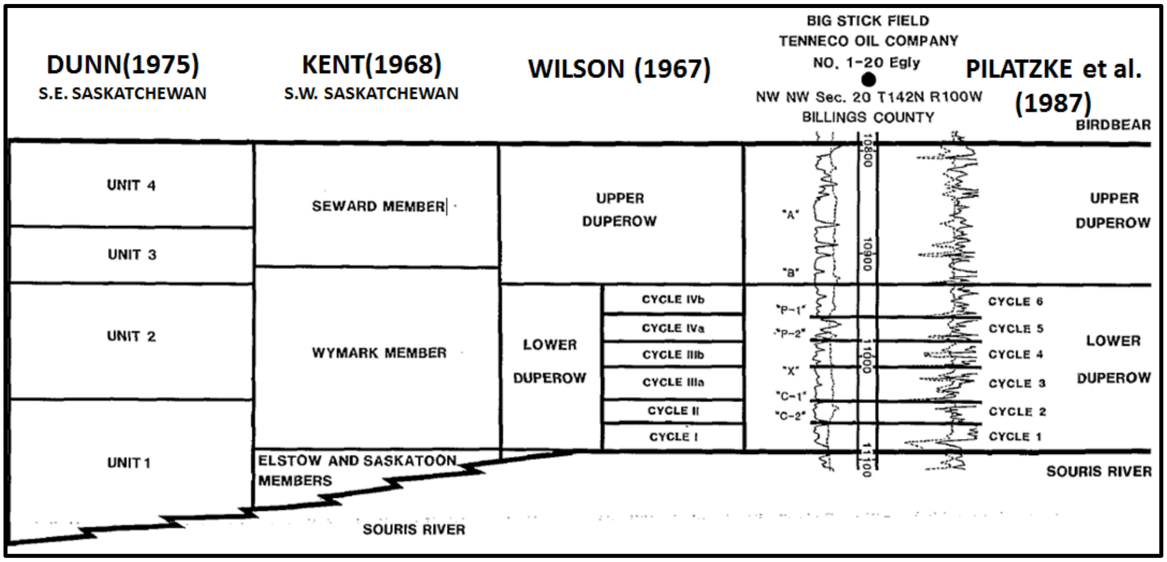

Figure 7. Comparative stratigraphy of the Duperow Formation, Saskatchewan, North Dakota, and Montana. (After Pilatzke et al., 1987)

Burke and Heck (1988) analyzed the reservoir characteristics of the Duperow Formation in the Tree Top Field located on the Billings Anticline in west-central North Dakota. Oil exploration on the anticline began soon after Anderson (1966) published the first maps of the structure. Most of the early discoveries produced oil from carbonates of the Mississippian Madison Group. Duperow production on the anticline was not established until 1978 when Four Eyes Field was discovered by Tenneco. Tree Top Field was discovered in 1979 with completion of the Wm. H. Hunt Trust Estate #1 Fritz from a carbonate reservoir in the Mississippian Madison Group (Fryburg zone). Detailed core analysis indicates reservoir rock in cycle 3 is sucrosic dolomite with generally greater than 7% porosity. Effective porosity is developed in intercrystalline dolomite enhanced by molds, vugs, and vertical fractures (Burke & Heck 1988). In the last 10 years there have been few studies done on the Duperow and none that have involved detailed mapping of the producing intervals on the Billings Nose or in North Dakota.

Purpose

The purpose of this study is to identify, correlate and map porosity and permeability in the lower cycles of the Duperow Formation on the Billings Nose of southwestern North Dakota. This study used core descriptions, wireline logs and core analysis to identify and correlate reservoir rocks that have higher porosity and permeability conducive to oil accumulation. Schlumberger's 3D modeling software will be used to create cross sections and map the geophysical characteristics of the formation within the Tree top and Whiskey Joe fields where core was described. The study area includes the southern half of McKenzie County, the western half of Dunn and Stark counties, and all of Billings and Golden Valley counties (Figure 8). It is bounded on the west by Montana and on the south by the southern border of Billings and Stark counties.

Methodology

Data that form the basis of this study include analysis of drill cores from 10 wells, core analysis (from well files) of 43 wells, and wire line logs from eight hundred and sixty one wells (Figure 8).

Cores were selected based on availability, quality, extent and location within the two fields chosen for a refined study area. All well and core data were provided by the North Dakota Geological Survey. Descriptive schemes are based on Dunham's (1962) classification method with modification by Folk (1959). Dunham's method describes lithology based on texture emphasizing deposition, which is problematic when considering the complexity of fabrics after diagenesis, thus Folk (1959) modifiers are employed to describe cementation. Cores are examined using 10X hand lens in addition

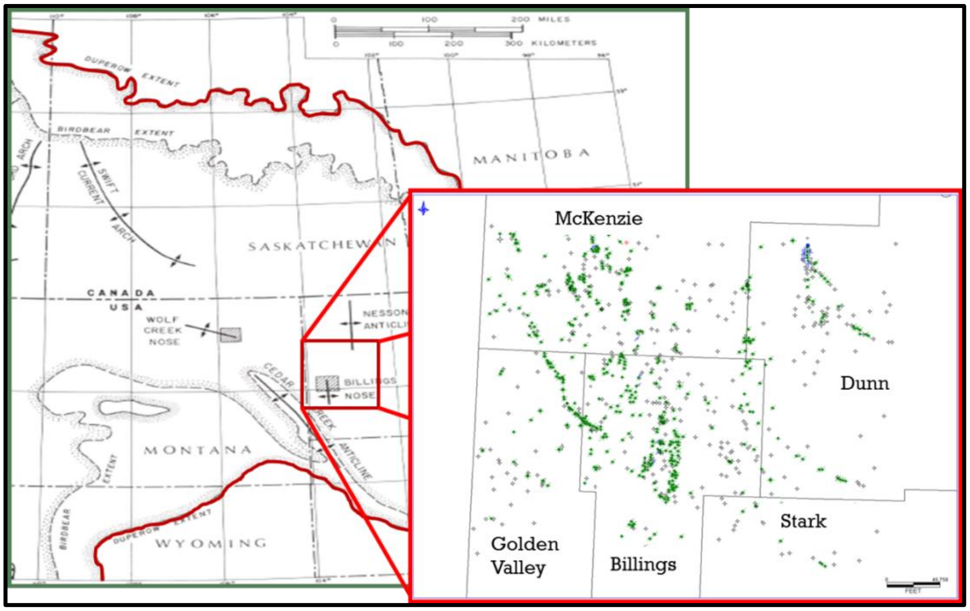

Figure 8. Map showing study area, counties and 861 wells used in this study. (modified from Ehrets & Kissling, 1985)

to a binocular light microscope. On occasion thin sections were viewed using Leica DM EP polarizing microscope system. No thin section descriptions were made but the thin sections were useful in identifying cement type as well as grain size. Abundance of content is indicated through the use of singular and plural terms or the qualifier, “rare” or “abundant” to indicate one, few, or many, respectively. Wilson’s (1967) cycle designation of the lower Duperow is the most complete cycles within the Duperow. Depositional facies comprising a complete cycle begin with a suite of sublittoral facies, continues upward through perilittoral facies, and is capped by various supralittoral facies (Burke & Heck, 1998).

Well logs from over 860 locations are used to determine formation thickness, log porosity and stratigraphy. A significant drop in gamma ray distinguishes the Duperow Formation from the younger Birdbear Formation, and a general trend of increasing gamma ray preceded by two minor spikes to the right represents the transition of the

Duperow Formation to the Souris River Formation. Picks are made in PETRA (2014) software based on these signatures and provide the basis for contour mapping and cross sections. Neutron and density logs are digitized to model total and matrix porosities, respectively. This data is exported from Petra (2014) to be used in the creation of the 3D model produced in Schlumberger's Petrel software.

The geologic model was produced using Schlumberger's Petrel Software. 868 wells were imported along with the formation tops data and 202 LAS digital curves for primarily gamma ray, neutron porosity, and density porosity. These digital curves came from raster logs that were digitized in I.H.S Petra. After they were imported to Petrel and upscaled into the 3-D model grid. In order to make the neutron density log most accurate, a correction was needed for the sections of the logs that passed through dolomite sections. This was done by using the slope of the dolomite curve found in Schlumberger's 2009 Edition Log Interpretation Charts (Figure 20). A digital elevation map was also imported in order to produce an isopach map of the Duperow top. Core analysis data for 40 wells was digitized in order to input it permeability data into the geological model. Cross plot analysis of the density vs neutron logs were used to determine the range of the variogram. A variogram is a statistical tool used to properly distribute properties such as porosity and permeability values throughout the model.

CHAPTER II

STRATIGRAPHY OF THE DUPEROW FORMATION

Stratigraphic Context

The Duperow Formation was defined by Sandberg and Hammond (1958) as a subsurface unit east of the 111º west meridian in central Montana and the Williston Basin (Figure 5). The Duperow Formation includes all beds between the overlying, lithologically similar Birdbear Formation and the underlying highly argillaceous Souris River Formation.

Powley (1951) was first to name the Duperow Formation for a section in the Tidewater Duperow-Crown well No. 1 in southwestern Saskatchewan, from a depth of 3,310 to 4,150 feet. Here, the formation reached a thickness of 849 feet (Rich & Pernichele, 1965). Powley considered the Duperow Formation to be equivalent to all but the lower section of the Beaverhill Lake Formation of Late Devonian age in Alberta (Ballard, 1963). The Williston Basin Nomenclature Committee of the American Association of Petroleum Geologists determined to abandon this initial designation of the Duperow because of confusion in Powley's definition in regards to the position and extent of the Duperow Formation. This designation was subsequently assigned to an overlying rock unit equivalent to the Woodbend Formation in Alberta (Alcorn, 2014).

The type section for the Duperow Formation was designated as the interval between the depths of 10,400 ft and 10,743 ft in the Mobil Producing Company's

Birdbear well No. 1 (S. 22, T. 149 N., R. 91 W.) in Dunn County, North Dakota (Burke 1989). Before that time the brown and black crystalline “limestones” (dolostone) that underlie the Three forks Formation was called the Jefferson Group (Peale, 1893). The Jefferson Group consists of the Duperow and overlying Birdbear Formations (Figure 8). Equivalents of the Duperow and Birdbear are found in the Jefferson Formation of the Little Rocky, Little Belt, Beartooth Mountains, and the Bridger Range in Montana (Sandberg and Hammond, 1958). Outcrops of time-equivalent rocks east of 111º west longitudes are defined by Sandberg and Hammond (1958) to be Jefferson Formation and only correlatives of the Duperow Formation because they are on the surface rather than subsurface (Burke, 1989).

Duperow lithology, in general, consists of thick-to-thin interbedded carbonates and evaporites that have varying amounts of noncarbonate clay, silt, and sand. The anhydrites are commonly interbedded with peloidal packtstones and carbonate mudstones replaced by anhydrite. Depositional thickness ranges from zero along the southern limit of the Duperow to over 800 ft in western Saskatchewan (Burke, 1989). Within the study area and on the Billings Nose, the Duperow thickness may vary between 250 and 350 ft thick. Isopach maps show that in southern Billings County and parts of Stark County the thickness of the Duperow is less than 300 ft thick (Figure 9).

The Duperow Formation subcrops in 3 different directions. In the south it subcrops under the Mississippian at the southern edge of the Williston Basin in South Dakota. The condensed sand and dolomite section of the cycles found in this southern area of the Williston Basin indicates that the subcrop is probably very close to the

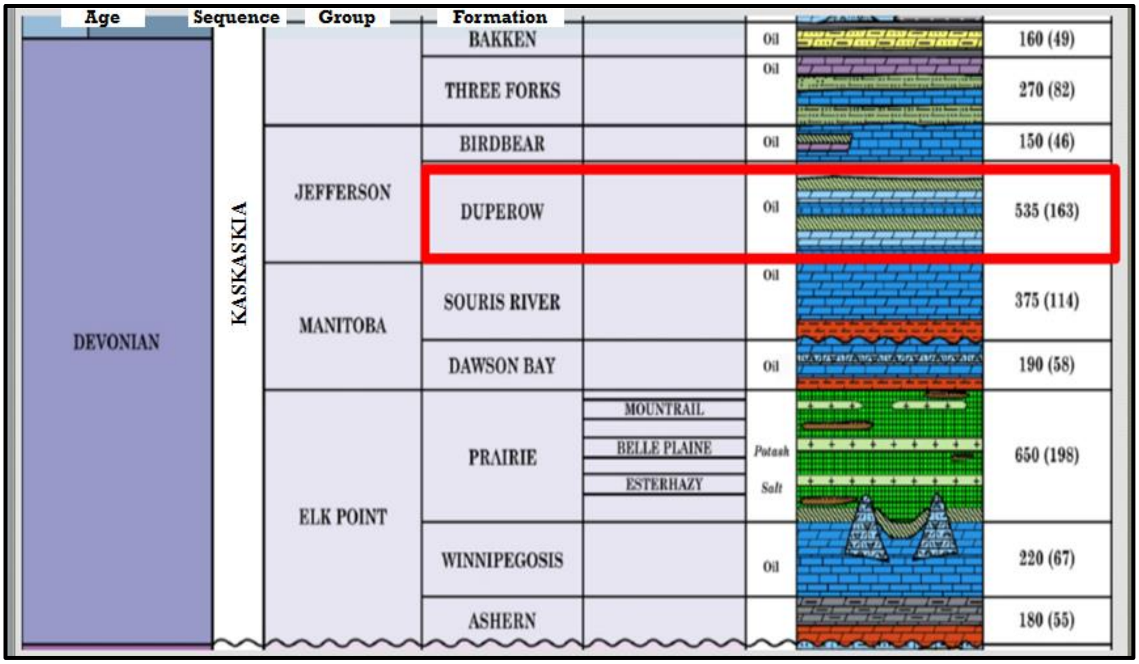

Figure 9. Generalized stratigraphic column of the Devonian system. (modified from Murphy et al., 2009)

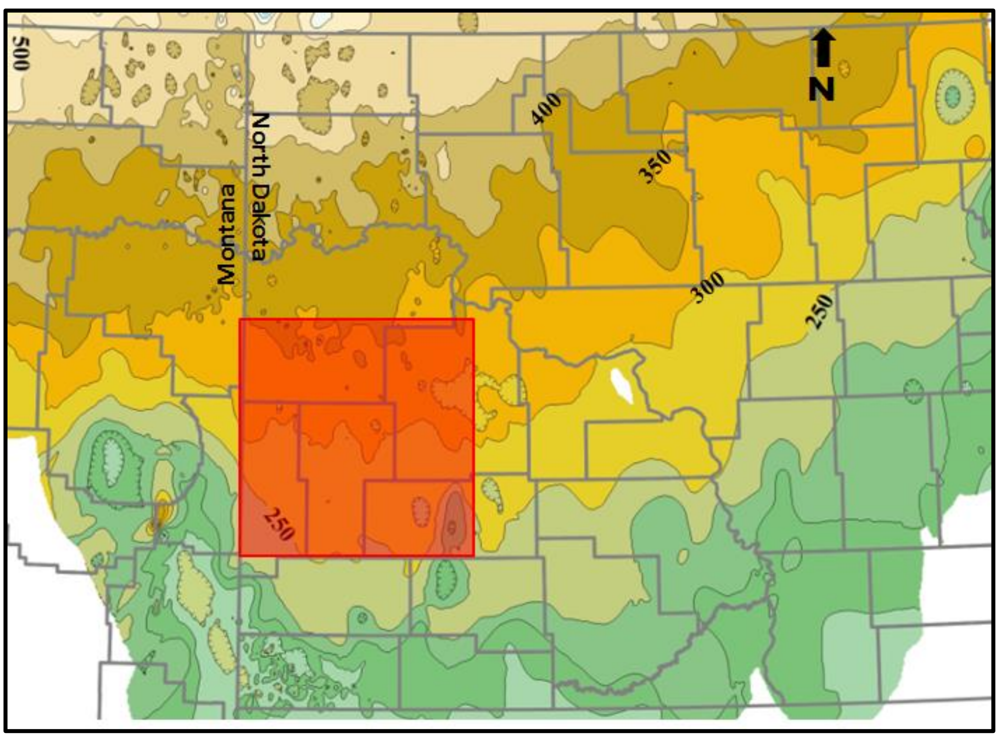

Figure 10. Isopach map of the Duperow Formation in the North Dakota and Montana. (modified from LeFever 2014. Location of study area is shown in western North Dakota.

depositional edge. Extensive erosion on the east and north sides of the basin allow the Duperow to subcrop beneath Mesozoic stratigraphy, making the depositional edges unknown (Wilson, 1967). On the west side of the Williston Basin the Duperow Formation crops out in Montana and Idaho as the correlative Jefferson Formation.

Production History

Production in the Duperow Formation began in the early 1950's in Canada and by the mid1950's were discovered in North Dakota. In Pilatzke et al. (1987) it was reported that over 200 wells in Montana and North Dakota produced from or had indicated pay in the Duperow Formation. Most production is from the lower Duperow except in areas of significant structural influences such as the Nesson, Cedar, and Billings anticlines (Burke & Heck, 1988).

Within the Duperow Formation, several upward shoaling cycles can be defined, each with a sealing anhydrite underlain by a porous stromatoporoid-rich sucrosic dolomite reservoir. Unlike the Mission Canyon tidal flat sequences, these are quite regular and can be correlated over large areas. Not all cycles are productive, although most contain some porosity; the degree of dolomitization is variable and affects the reservoir quality (Altschuld & Kerr, 1982).

In January 1984, the Duperow Formation was reported to have produced over 69 million bbl of oil from the previously mentioned wells in Montana and North Dakota. The wells are often characterized by high initial potentials and steep declines (Pilatzke et al., 1987). In the year 1998 oil production of the Duperow in North Dakota was 2.6 million barrels of oil from 167 wells with a cumulative production of 125.5 million barrels of oil from 409 wells. As of December 2014 the cumulative production of the

Duperow Formation was 153.9 million barrels of oil from 348 wells. The Duperow continues to produce from the most productive reservoir interval which is cycle 3 of the lower Duperow. Other productive reservoirs within the Duperow are Stromatoporoid banks of other sequences or sucrosic dolomite which is interpreted to be dolomite replaced stromatoporoids (Pilatzke et al., 1987).

Core Descriptions

Throughout the study area, 10 cores were selected and their lithologies were described using Dunham's (1962) classification scheme with Folk (1959) modifiers. These cores were selected because of their location in the Tree Top and the Whiskey Joe Fields and availability. These cores did not reach the contact between the Duperow and Birdbear or the Duperow and Souris River Formation, but were located in cycle 3 of the lower Duperow as designated by Wilson (1967) and Pilatzke et al. (1987).

A division of the Duperow Formation was done by Wilson (1967) into an upper and a lower unit. The upper unit is made up of more thinly bedded and less complete cycles consisting mostly of supratidal and intertidal deposits (Pilatzke et al. 1987). The lower Duperow cycles show a large proportion of subtidal and intertidal environments which represent shoaling upward cycles as described by Wilson (1967) and Hoganson (1978). A cycle typically consists of (1) a lower subtidal member which is either a dark brown brachiopod-crinoid lime wackestone with a mud matrix or a stromatoporoid boundstone; (2) a middle intertidal member which is either a laminated lime mudstone or a brown lime mudstone characterized by a faunal assemblage of ostracods and calcispheres interbedded with nonfossiliferous to slightly fossiliferous pelletoid beds or laminated lime mudstone; and (3) an upper supratidal member of bedded anhydrite and gray green, silty, very fine grained dolomite (Pilatzke et al. 1987). The ten cores of this study consisted of all or most of the cycle described above.

Lithofacies Descriptions

The Duperow is divided into the upper and the lower Duperow by Wilson (1967). In Saskatchewan formal units and members have been designated for the Duperow, namely the Saskatoon, Wymark and Seward. Wilson (1967) identified five informal cycles within the Duperow of North Dakota which correlate with the three members of southern Saskatchewan. Cycle one corresponds to the Saskatoon Member, cycles two through the lower part of cycle five correlate with the Wymark Member, and the upper part of cycle five correlates to the Seward Member.

Hoganson (1978) determined that the Duperow Formation consists of four distinct facies: (1) supratidal which consists of sediment deposited above normal high tide but within range of spring and storm tides; (2) intertidal consists of sediment deposited between normal low and normal high tide; (3) stromatoporoid bank consists of sediments deposited and entrapped in shallow marine areas of stromatoporoid buildup; (4) subtidal consists of sediments deposited below low tide level.

Core images from well #7097 D. Osadchuk 1 well of the W. H. Hunt Trust Estate in Billings County are used below because of availability and the clarity of the cycles visible in this core.

Supratidal

These cycles discussed by Wilson (1967) are directly related to the facies described by Hoganson (1978). Within cycles II, III a, and III b are found facies 1-4, and these facies and cycles were identified in the 10 cores examined in this study.

Each of the intervals in which core was taken started at the top with the supratidal facies. This facies consists of an unfossiliferous calcareous mudstone which is a major microfacies of the supratidal environment (Figure 11), and is closely associated with an anhydrite (Figure 12) cryptocrystalline dolomite microfacies (Hoganson, 1978). Periodic subaerial exposure is indicated by desiccation features (Figure 11), birds-eye structures and frequent disconformities. Birds-eye structures and desiccation features are diagnostic in fine grained supratidal sediments within tidal-flat complexes (Hoganson, 1978).

Figure 11. Core photo of supratidal Dolomitic Mudstone with desiccation structures formed by subaerial exposure overlying algal mat. NDGS #7097 at 11,305 ft.

Supratidal anhydrite in the Duperow Formation usually occurs as nodules but layered and “chicken-wired” anhydrite is also present. At times supratidal anhydrite and dolomite occur as alternating dark and light laminae (Figure 12). The anhydrite often shows contorted flow-like features resulting in intraformational microbreccia. The

Figure 12. Alternating laminae of supratidal bedded anhydrite and dolomite. Contorted anhydrite flow structures in the middle section. NDGS well #7097 at 11306 ft.

anhydrite cryptocrystalline dolomite microfacies is easily discerned on gamma ray-neutron logs by its high density. Secondary dolomite and anhydrite occur throughout the Duperow Formation. Secondary anhydrite usually occurs as disseminated acicular crystals but can also be coarse and blocky (Hoganson, 1978). Anhydrite was initially gypsum crystals which were altered within soft sediment to create the nodular and mottle appearance of the observed anhydrite facies. Horizontal beds of dolostone are interbedded with anhydrite in many locations representing deposition within shallow, calm lagoons (Wilson, 1967). The lack of fossil content and the occurrence of halite suggest super high salinities within an evaporite environment. Supralittoral facies consists of anhydrite (dark) and anhydritic dolomudstones and peloidal packstones (light) interbedded and interlaminated with enterolithic folding (Figure 12). Low supralittoral to high perilittoral facies (which is the top of the upper producing zone) consists of dolomitized mudstone to peloidal packstone exhibiting “stromatolitic” laminations throughout (Figure 13). Structures such as water escape pipes, coarse storm over wash beds, and flat chip conglomerates may be present in this interval (Burke and Heck, 1988).

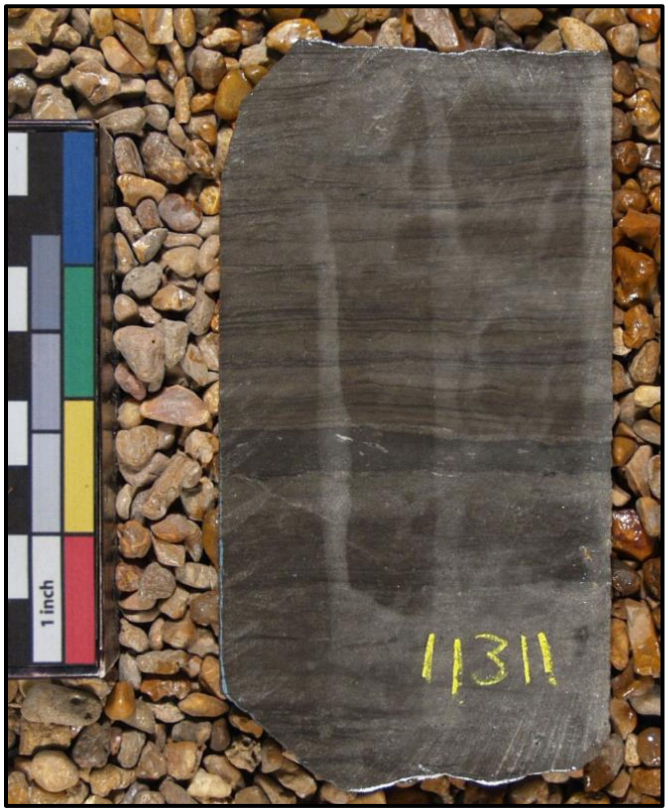

Figure 13. Dolomitized mudstone to peloidal packstone exhibiting “stromatolitic” laminations representing the top of the upper Duperow (supratidal) producing interval. NDGS well #7097 at 11311 ft.

Intertidal

The intertidal environment of the Duperow Formation consists of dolomitic mudstones, microbially laminated dolomitic wackestones, and in some cases packstones. Intertidal facies occur due to rapidly changing depositional environments resulting from alternating subaerial exposure and marine inundation (Hoganson, 1978). In more restricted environments the dolomitic mudstone contains thin to thick laminations, soft sediment deformation, flaser bedding, water escape structures, and occasional fossils and burrows. Laminations and bedding suggests that these facies were deposited in an intertidal mudflat.

Unfossiliferous, pelletal calcareous mudstones occur in more restricted intertidal facies but fossiliferous wackestones and packstones are more typical of less restricted environments. Primary laminations are generally not present because of bioturbation but some do survive to reflect current activity. Bioturbation is not as evident in intertidal environments as in the subtidal environments. The effects of current working are indicated by the intraclastic nature of the rocks, abraded and broken fossil fragments, mixed faunal elements and the preferred orientation of many of the organic allochems. Scouring, sorting, cut and fill structures and cross-bedding corroborate the intertidal origin of this facies (Hoganson, 1978).

The upper intertidal or perilittoral facies is the base of the producing horizon. It consists of intraclastic dolostone grading downward into slightly dolomitic, anhydrite limestone, of wackestone to mudstone textures (Figure, 14).

The lower portion of the facies is slightly dolomitic and anhydritic organic limestone with oncolites, ostracod, and peloidal packstone to grainstone (Figure 15). These are interbedded with mudstones that exhibit calcite filled fenestral porosity (Burke and Heck, 1988).

Figure 14. Dolostone at the base of the upper producing interval. Intraclastic dolostone grades downward to poorly fossiliferous wackestone to mudstone textures. NDGS well #7097 at 11314 ft.

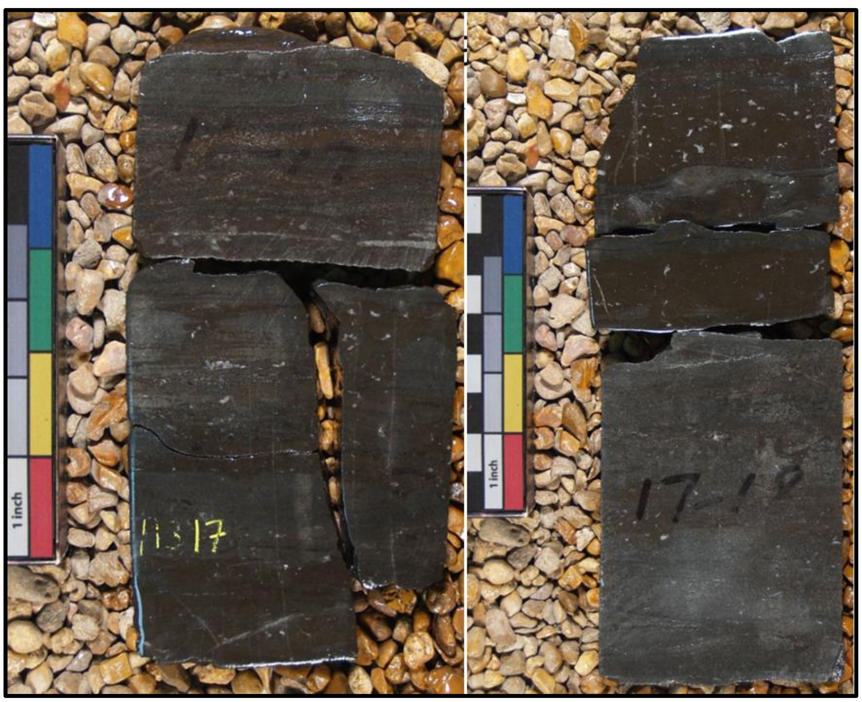

Figure 15. Wackestone on right and peloidal packstone on the left. Dolomite and anhydrite is laminated in the wackestone. Pyrite is present in solution seams. NDGS #7097 at 11317-11318 ft.

Stromatoporoid Bank

Restricted flow of water into the basin by reefs in southern Alberta made it possible for stromatoporoid banks or mound environments to form. The mounds consist of sediments deposited and entrapped in shallow marine areas of stromatoporoid build up (Hoganson, 1978). Stromatoporoids often build a rigid framework in front of a tidal flat or lagoon where bioclastic wackestones/packstones are deposited with crinoids, and brachiopods present (Alcorn, 2014).

Stromatoporoid bank facies have a range of textures from wackestones to boundstone and are vertically and horizontally restricted, never attaining a thickness of more than 25 feet. The wells in this study only have small sections of stromatoporoids no more than 6 feet. These banks are not restricted to any particular stratigraphic level in the Duperow formation. Stromatoporoid banks are sometimes called sublittoral bank facies that consist of highly dolomitic limestones with hemispheroidal (Figure 16) stromatoporoid floatstones in highly fossiliferous wackestone matrix (Burke & Heck, 1988).

The stromatoporoid growth is easily recognized by its characteristic patterns-a cut normal to growth plane shows a network pattern, an oblique cut shows a vague anastomosing or knobby pattern, and a cut parallel to growth shows craterlike tubercules and astrorhizal canals. It is clear that the stromatoporoid framework was originally somewhat porous and permeable. Its susceptibility to alteration permits the inference that the finely trabecular microstructure of the organism was originally aragonite, the metastable form of calcium carbonate (as in many coelenterates). Particularly where dolomitized, the stromatoporoid framework becomes porous and permeable (Wilson, 1967).

Figure 16. Stromatoporoid boundstone/floatstone. A) Dark grayish brown dolomitic limestone and hemispheroidal stromatoporoid floatstone in a highly fossiliferous wackestone matrix (NDGS #7097 at 11326 ft). B) Gray to grayish brown stromatoporoid boundstone. Colonies are often separated by horsetail micro-stylolites in this facies (NDGS #7776 at 11114 ft).

Tectonics appears to have been an instrumental part in the growth of the Duperow stromatoporoid banks. Positive features such as the Nesson Anticline and Billings Nose in North Dakota and the Sweetgrass arch, the Little Rocky Mountains, and the Poplar dome, and the Richey area in Montana are areas of extensive growth of stromatoporoid banks. These slightly positive features provided optimum growth position for stromatoporoids. Along the Bear Creek-Corral Creek and Killdeer trends of North Dakota, bank development seams to have occurred along lineaments that may have been controlled by basement faulting. A similar relationship was observed by Wilson (1975) in the Alberta basin (Pilatzke et al., 1987).

Duperow reservoirs are commonly fine-grained sucrosic dolomites that replace what are interpreted to be stromatoporoid banks. Wilson (1967) observed that Duperow stromatoporoid banks had good primary porosity and permeability and were preferentially dolomitized (Pilatzke et al., 1987). These banks differ from reefs because they are not laterally extensive, rarely extending no more than 1 to 1.5 miles in any direction. They are normally found at the base of individual cycles and are common in cycles 3 and 4.

Subtidal

The subtidal depositional facies consists of sediments deposited below low tide level. Characteristically, it exhibits a fossiliferous, massive, non-laminated wackestone texture (Hoganson, 1978). As part of the lower producing horizon, it consists of slightly anhydritic and calcitic sucrosic dolomite (Figure 17). Besides accumulation of anhydrite pockets and the presence of sucrosic dolomite the subtidal environment contains intraclastic floatstones with a mudstone to poorly fossiliferous wackestone matrix. The porosity of the sucrosic dolomite is intercrystalline and contains microvugs (Burke & Heck, 1988).

A wide range of diverse fauna suggests deposition under normal marine conditions with normal salinity and shallow water depth (Alcorn, 2014). Corals, sponges, brachiopods, crinoids, bivalves, and gastropods suggest deposition in water that was well circulated and open (Wilson, 1967). The sediments of the subtidal facies were the major source of material for movement by storms and tides into the intertidal and supratidal environments (Hoganson, 1978).

Figure 17. Light brown to grayish brown sparsely fossiliferous wackestone or sucrosic dolomite. White anhydrite shown on right side. (NDGS #7097 at 11332 and 11336 ft).

At the base of the cycle is a contact between the subtidal and the older supratidal environments which is the base of the lower producing horizon. It is a highly calcitic dolomite of intraclastic floatstone with mudstone to poorly fossiliferous wackestone matrix overlying, with irregular contact, a supralittoral laminated to cross laminated sandy, silty, clayey, microcrystalline dolomudstone. Below that is dolomitic mudstone or patterned dolomite which at times can be clayey, silty and sandy (Figure 17). This is the high gamma ray signal seen on logs (Burke & Heck, 1988).

Figure 18. Upper left shows contact between subtidal and supratidal environments or end of the cycle. Bottom right is patterned dolomite. This contact was observed in all ten cores of this study. (NDGS #7097 at 11336 -11337 ft).

CHAPTER III

3D GEOLOGICAL MODEL WORKFLOW

Data

The modeling process began with the compilation of public data from the North Dakota Industrial Commission, including well data, well logs, and petrophysical data from core analysis. Log data includes location, Kelly bushing, total depth, and measured depth to formation tops. Well logs consist of gamma ray, density-porosity, and neutron-porosity while the petrophysical data consists of porosity, permeability, water saturation and oil saturation. Well data for the Duperow Formation in North Dakota was compiled and raster logs were digitized in preparation of inputting data into Schlumberger’s Petrel software.

Well headers and well logs for 202 wells and 43 cores were used as input for Petrel 3-D modeling software. The workflow of the model begins with the designation of projects settings such as surface and depth measurement unit (X, Y, and Z measurements are given in feet in this study) and coordinate system for spatial referencing. This study utilized the North American Datum 1927 coordinate system in North Dakota.

Raster logs of over 140 wells were viewed and digitized in the I.H.S Petra Software and then exported to Petrel. Formation tops data was also compiled in Petra and then imported into the model, where the tops were used to create surfaces for the three formations (Birdbear, Duperow and Souris River).

Grid Development

By creating surfaces of the tops data the modeler can more easily determine where anomalies in the tops data are present. These are represented as deep dips or sharp peaks in the contoured surface. Many times these anomalies can be adjusted quite easily. In this study, some of the wells were deviated and needed to be imported with the deviation survey data ten of the wells correctly. Additional surfaces (top and bottom) were constructed for cycles 2 and 3 of the lower Duperow Formation.

These surfaces were used in the construction of a 3-D grid for the interval from the Birdbear formation to the top of the Souris River Formation. The grid was set to be 500x500 X Y units. The surfaces divided the grid into four zones; the upper most zone is that of the Birdbear Formation, which is overlain by the Upper Duperow. The lower Duperow was divided into cycle 3 and cycle 2 with the Souris River acting as the lower bounding surface. The porous reservoir facies of cycle 3 was divided into three layers representing the lithologic changes. Cycle 2 was divided into two layers representing cyclical facies changes. The Upper Duperow Formation was divided into three layers designated as either limestone or dolomite. These layers are made to further divide the grid into smaller cells. The grid volume was calculated using the grid cells in the I & J directions and using the average Z increment which results in the equation 776 ft X 649 ft X 33.79 ft = 17017454.96 ft^2. The total number of grid cells totaled just over 5.5 million cells.

Property Distribution

The primary modeling effort in this study was to determine and distribute the porosity and permeability data within the lower cycles of the Lower Duperow Formation.

Lithologic properties are a major part of the petrophysical property distribution because of the differences in porosity and permeability between different lithotypes. Lithologic or facies designation is done to insure a greater level of accuracy. The lithofacies to be included in this model and distributed were studied carefully in literature, core samples and well logs, and include dolomite, limestone, anhydrite, and an interbedded dolomite and anhydrite. The lithologies were kept simple for two reasons. First the lack of experience using the Petrel Modeling software, and second, the lack of time needed by the modeler to learn and incorporate the needed skills for a more detailed lithofacies development. The limestone is the most porous of these lithofacies, followed by the dolomite, dolomite/anhydrite, and finally the lowest porosity is the anhydrite. Figure 19 shows the lithology distribution in comparison with the zone definitions in a cross section through the Billings Nose.

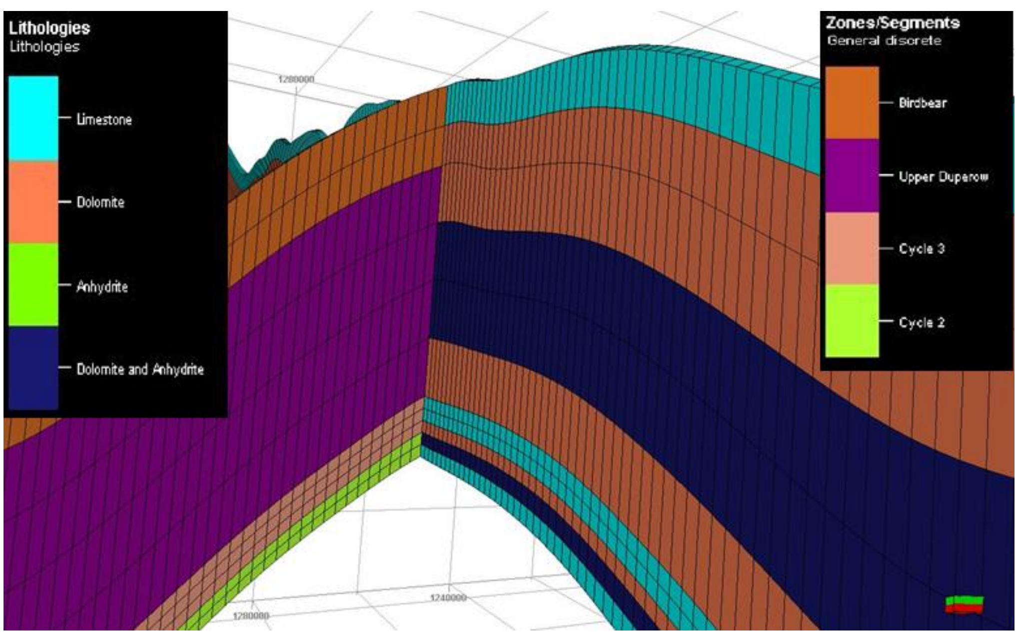

Figure 19. Cross section of the Birdbear to the top of the Souris River Formations. On the right, lithologic property distribution, and on the left is the zone designation (Birdbear, Upper Duperow, cycle 3, cycle 2). X and Y coordinates are in feet from an arbitrary origin.

The lithology property was created in order to identify which areas the log porosity values would need to be corrected. The porosity values used in this study come from the neutron density logs digitized from the raster logs of over 200 wells. 62 of these wells were in the Tree Top and Whiskey Joe Fields. These logs were imported into Petrel and upscaled to become a property within the 3-D grid. In order for the porosity property to be accurately distributed throughout the grid the logs were inspected to ensure the logging tool was calibrated for a limestone matrix and corrected when the logging tool collected data in dolomite facies. An equation for the slope of dolomite curve originates from the Schlumberger 2009 Edition, Log Interpretation (Figure 20). The slope of the line

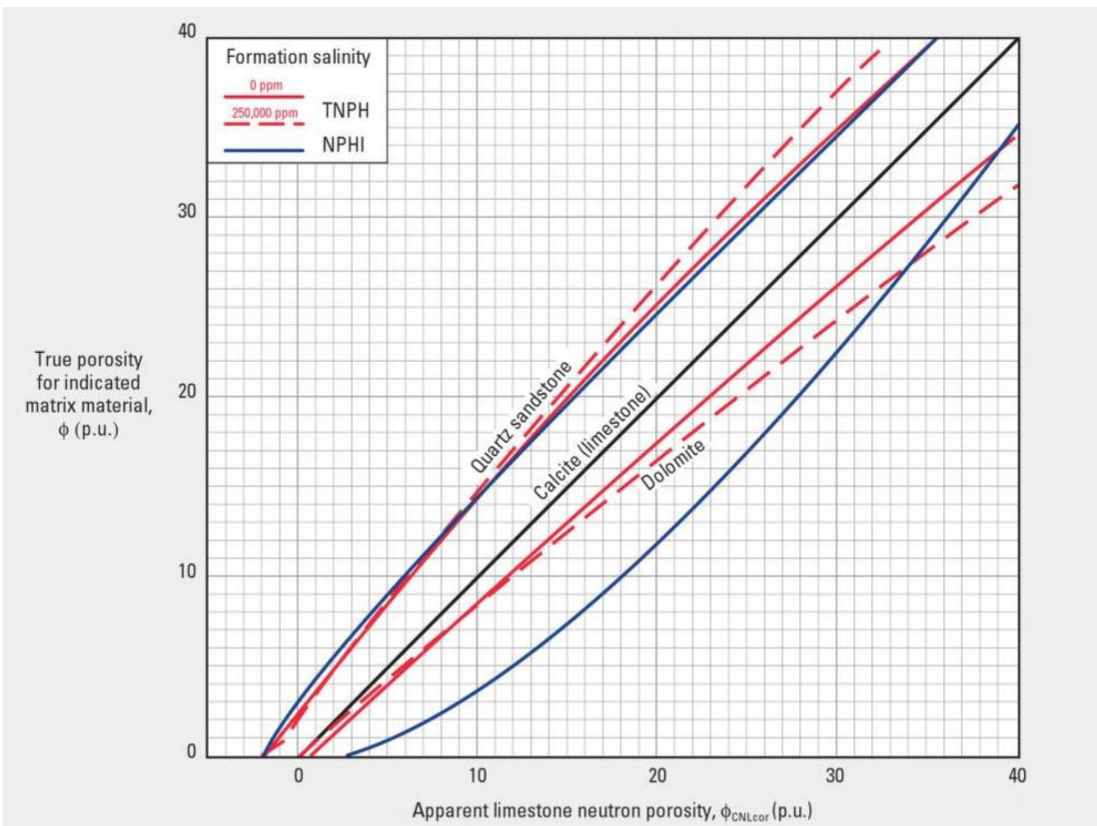

Figure 20. Chart showing neutron porosity vs. true porosity for indicated matrix material. The slope of the blue line on the right was used in calculating the correction for logs passing through dolomite facies.

was found by digitizing the line and putting it into excel to extrapolate the slope. This equation ($y = 0.0125x^2 + 0.4274x - 1.6274$) was used in the calculator statement in Petrel Software in order to make modifications to the digital porosity logs for them to represent true porosity. Once the logs were modified and upscaled, the distribution variogram was then developed to accurately model the petrophysical properties.

Once the core analysis logs were imported, the permeability log was upscaled and added to the 3-D grid as a property. Both the porosity log and the permeability logs were upscaled and the porosity logs corrected the distribution of the properties needed to be completed.

Porosity and permeability are important parts of the models distribution of petrophysical properties, as those properties are affected by the facies and the depth. The core data are tied to those specific facies and depths, which is why they are considered hard data. Petrophysical property distribution in this case utilized the Gaussian Random Function statistical method, which is guided by specification of maximum, minimum, mean, and standard deviation. The Gaussian Random Function method also requires a specified variogram for completion. In conventional geostatistics the variogram is calculated using existing data to measure variability in the data at a distance from a certain point. The variogram range is specified as a distance from a point to which the method may interpolate or extrapolate in the estimation of parameter values.

The neutron porosity distribution was able to be calculated with a horizontal variogram because there was an ample amount of well data points. The vertical variogram was calculated but had very few data points which made it useless in this study. A horizontal variogram was also successfully constructed for the permeability data obtained from the core analysis. This porosity values were compared to the porosity form the core analysis to verify the accuracy of the log porosity. I feel that the distribution does stay true to the data points given.

Though there is limited data for the permeability, the calculated distribution seams to correlate to with distribution of the porosity data. On the Billings Nose it is easy to see some of the more porous zones are not always the most permeable, such as cycle 3 (Figure 21). The porosity of the Duperow Formation is greatest around the scattered

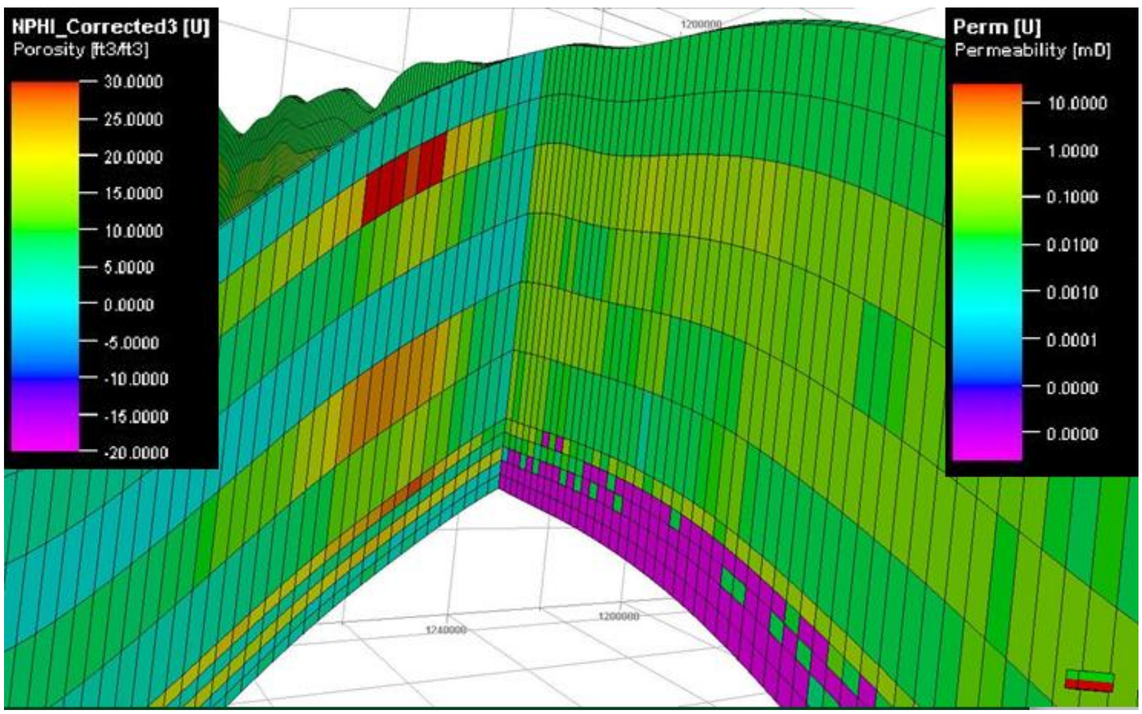

Figure 21. Cross sectional view of porosity (left) and permeability (right). In this location permeability is not as good as porosity in cycle 3. X and Y coordinates are in feet from an arbitrary origin.

stromatoporoid banks. Those were not mapped in this study, but sucrosic dolomite and calcareous boundstone found in cycle 3 represents the higher porosity zones (Figure 22).

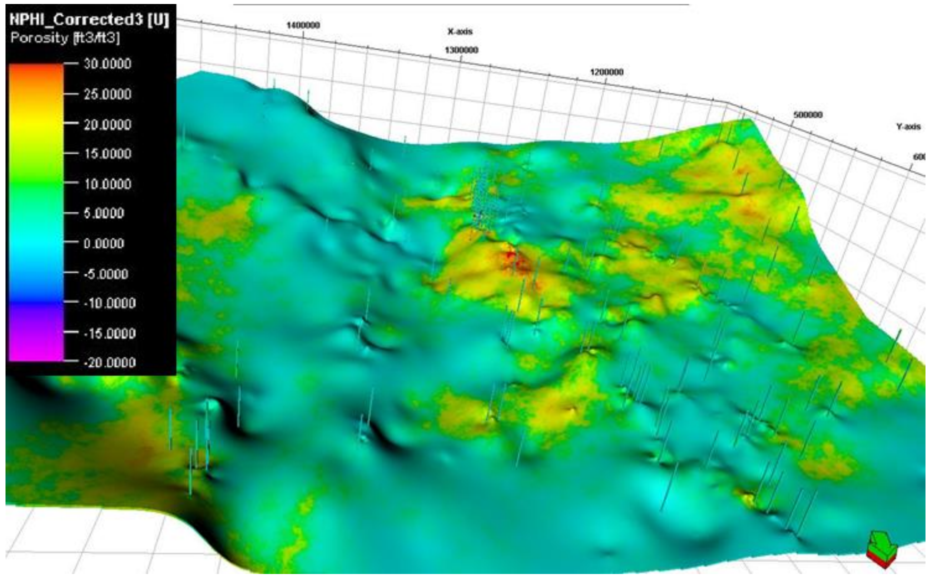

Figure 22. Porosity map of the base of cycle 3. High porous zone in center of image is part of the Billings anticline. 50X vertical exaggeration. X and Y coordinates are in feet from an arbitrary origin.

Permeability at the base of the cycle 3 shows there an overlap of high permeability and high porosity just north of the tree top field near the center of the map (Figure 23).

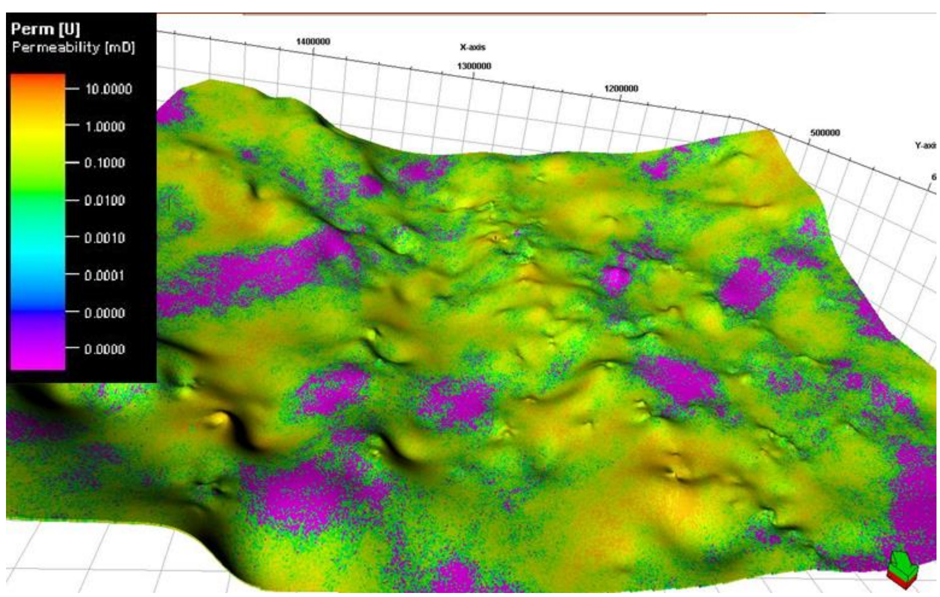

Figure 23. Permeability at the base of cycle 3 showing most permeable zone along the Billings Anticline. 50X vertical exaggeration. X and Y coordinates are in feet from an arbitrary origin.

CHAPTER IV

CONCLUSIONS AND DISCUSSION

The Duperow Formation has a long history of oil production in North Dakota. Most of the studies were done more than 15 years ago. The Billings Anticline is one of the most productive areas for the Duperow Formation because of its depositional history.

This study has aimed to provide a synthesis of information to better understand the porosity and permeability of the Duperow Formation the Billings Anticline and in regions surrounding it. Isopach and contour maps have been made of the Duperow before but having a 3 dimensional representation of its surface and petrophysical properties can help understand the resources available.

The reason for much of the high porosity zones and oil production in the Duperow stems back to the environment of deposition. As a back reef/sabkha environment along a broad extensive shelf, the Duperow experienced many changes. At times there was restricted flow around the topographic high we know as the Billings Anticline which allowed for a number of cycles to occur extensively in the lower Duperow Formation.

These cycles can be traced throughout most of North Dakota and are recognized as official members in Saskatchewan and Alberta. Within these cycles are 4 distinct environments, such as the Supratidal zone which consists of an unfossiliferous calcareous mudstone which is a major microfacies of the supratidal environment and is closely associated with an anhydrite cryptocrystalline dolomite microfacies. The intertidal environment of the Duperow Formation consists of dolomitic mudstones, microbially laminated dolomitic wackestones, and in some cases packstones. Intertidal facies occur do to rapidly changing depositional environments resulting from alternating subaerial exposure and marine inundation. These rapidly changing events are what make the Duperow Formation unique and interesting. . Stromatoporoid banks are sometimes called sublittoral bank facies that consist of highly dolomitic limestones with hemispheroidal stromatoporoid floatstones in highly fossiliferous wackestone matrix. Finally there is the subtidal depositional facies that consists of sediments deposited below low tide level. Characteristically, it exhibits a fossiliferous, massive, non-laminated wackestone texture.

The core analysis of 40 wells and the wire line logs of 202 wells make it possible to visualize the petrophysical characteristics across a large study area. The development of the 3-D model was to show the complexity of the formation and where the porous and permeable areas are located. The porous and permeable zones have been exploited in many places such as the Billings and Nesson anticlines for their oil reserves. In the annual report of North Dakota’s cumulative oil production of 2014, the Duperow Formation had produced 153.9 million barrels of oil out of 485 wells. The amount of production and the number of wells have steadily decreased since 1998 as other formations have become much more lucrative.

The maps and cross sections produced in this study show that the cycles of the Duperow Formation, predominantly cycle 3, have reservoir quality porosity and permeability in some locations, specifically along the Billings Anticline and it extends beyond the anticline showing the extensiveness of the cycle's deposited. The dolomitization of the stromatoporoid banks or of the limestone also creates high porosity zones but they are hard to predict where they will be. With the statistical methods used to distribute the properties and the efforts to make the porosity and permeability as accurate as possible then the model produced in this study will allow others to create more detailed investigations in the future.

Future studies that could be done are to evaluate the amount of oil that was in place at the time of data collection and determine how much is still in place after production has occurred. More detailed maps could be produced if more wells were digitized and more cores were described.

APPENDICES

Appendix A
Core Descriptions
Well # 7283 (3300700426)

SE, SE, sec 10, T142N, R100W, Billings County

W. H. Hunt Trust Estate

11317’-11321’ Evaporite interbedded with thin Dolomitic Mudstone, grayish black to light gray, light brown, microbial laminae, rip up.

11321’-11326’ Interbedded Calcareous Mudstone and Dolomitic Wackestone, medium to dark gray, pale yellowish brown, stylolite’s, mud clast, calcite crystals, microbial laminae, anhydrite filled fractures.

11327’-11328’ Evaporite, grayish black to yellowish brown, microbial laminae, soft sediment deformation, horizontal fractures, healed hairline fractures.

11328’-11334’ Evaporite, interbedded with dolomitic and calcareous Mudstone, light to medium gray, brown to dark grayish black, thin laminations, mottled, gypsum nodules.

11334’-11339’ Mudstone interbedded with Dolomitic Mudstone, yellow brown to dark grayish black, laminated, lenticular laminae, microbial laminae, rip ups, stylolite’s, calcite crystallization.

11339’-11342’ Thinly laminated Mudstone interbedded silty Mudstone/Wackestone, medium gray to dark gray and brownish gray, very fine to fine grained, multiple horizontal healed and unhealed hairline fractures, anhydrite replaced fossils, stylolites.

11342.6’-11347’ Interbedded shaly Wackestone, medium light gray to brownish gray, dark gray, crystalline to very fine grained, thinly laminated, burrows, replaced fossils, low amplitude and moderate frequency stylolite, vertical fractures, sub-vertical to horizontal healed hairline fractures.

11347'-11354' Dolomitic Wackestone, light gray brown to dark brown, very fine, bioturbated, microbial or algal inclusion, low to moderate amplitude stylolite's, vertical hairline fractures, stromatoporoids, microbial.

11354'-11359' Calcareous Wackestone, medium to dark gray and brownish gray, abundant stylolites, microbial nodule, sub-vertical and sub-horizontal healed and unhealed hairline fractures.

11359'-11361' Interbedded Dolomitic Wackestone, medium grayish brown to yellow brown, very fine to fine and crystalline, soft sediment deformation, abundant burrows, bryozoans, vertical and sub-vertical hairline fractures.

11361'-11364' Patterned Dolomite, yellowish gray to medium gray, microbial laminae, rip up surface, horizontal and vertical hairline fractures.

11364'-11366' Interbedded evaporite and Dolomudstone, grayish brown to dark grayish black, lenticular laminations, abundant horizontal to sub-horizontal hairline fractures.

11366'-11371' Calcareous Mudstone, dark brown to medium gray, very fine grained to crystalline, abundant low amplitude and low to moderate frequency stylolites, abundant burrows, intraclasts, vertical to sub-vertical hairline fractures.

11371'-11372' Mudstone, medium to dark yellowish brown, fine to very fine grain, gypsum nodule, microbial laminations, soft sediment deformation, burrows, vertical and sub-vertical fractures, low amplitude and moderate frequency stylolites.

11372'-11375' Limestone interbedded with mudstone, light brownish gray to dark brown and brownish black, very fine to fine grained and crystalline, filled and replaced burrows, microbial beds, abundant vertical to horizontal hairline fractures, medium to high amplitude and medium frequency stylolites.

11375'-11377' Mudstone, yellowish brown to brownish gray, very fine and crystalline, bioturbated, burrows, high and high amplitude high frequency stylolites.

Well # 7349 (3300700442)
SW, SE, sec 22, T142N, R100W, Billings County

W. H. Hunt Trust Estate

11210'-11212' Dolomitic Boundstone, light yellowish brown to dark brown and grayish black, very fine grained and crystalline, few bioturbations, replaced filled burrows, vertical and horizontal healed hairline fractures, water escape structure, abundant low amplitude low frequency stylolites.

11212'-11213' Dolomitic Wackestone, medium gray to grayish brown, laminar bedding, fossil fragments, vertical and sub-vertical fractures, low amplitude low frequency stylolites.

11213'-11214' Dolomitic Mudstone interbedded with Anhydrite, dark gray to light or medium brown, thin microbial laminae, dolomitization deformation, horizontal and vertical to sub-vertical hairline fractures, stylolites.

11215'-11217' Dolomitic Boundstone, brown to dark brown with dark gray Anhydrite nodules, very fine grained and crystalline, thinly laminated with micrites, rip up clasts of Anhydrite nodules, bioturbated, abundant vertical to horizontal hairline filled fractures.

11217'-11219' Calcareous Mudstone interbedded with Dolomitic Mudstone, fine to very fine grained and crystalline, parallel laminations, and convoluted laminae, sharp irregular contacts, horizontal to sub-horizontal fractures.

11219'-11223' Dolomitic Wackestone interbedded with Anhydrite, light gray to dark grayish black, very fine to fine grained and crystalline, trough cross bedding, wavy laminations, microbial bedding.

11223'-11224' Dolomitic Mudstone/Wackestone interbedded Shale, medium gray to light brown and black, fine to very fine grained, laminae, vertical and horizontal to sub-horizontal hairline fractures.

11224'-11227' Packstone, dark gray, fine grained, slightly mottled and few burrows, vertical fractures, sub-horizontal filled hairline fractures, low amplitude and low frequency stylolites.

11227'-11228' Boundstone interbedded with Patterned Dolomite, tan to light brown, very fine grained and crystalline, microbial laminae, rip up clast, soft sediment deformation, water escape structure, filled vertical and sub-vertical fractures, unfilled vertical and sub-vertical fractures.

11229'-11231' Anhydrite interbedded with Dolomitic Mudstone, light to medium brown and light gray to dark gray and black, very fine grained and crystalline, microbial wavy bedding, scour and fill, rip up clasts, few bioturbations, horizontal to sub-horizontal fractures.

11231'11234' Patterned Dolomite and Anhydrite interbedded with Dolomitic Mudstone and Shale, tan to brownish gray, brownish gray to black, very fine grained and crystalline, soft sediment deformation, rare burrows, gypsum nodule, enterolithic folding, horizontal to vertical hairline fractures.

11234'-11236' Dolomitic Floatstone and anhydrite interbedded with Mudstone and Patterned Dolomite, medium gray to clack and tan to brown, very fine to fine and crystalline, rare bioturbation, mottled, microbial laminae over mudstone intraclasts, wavy or flaser bedding, irregular surface from Floatstone to anhydrite gypsum nodules and load cast, thin black shale makes lower sharp contact, sub-horizontal hairline fractures.

11236'-11239' Calcareous Mudstone and Dolomitic Wackestone, light gray to medium gray, tan to grayish brown, very fine to fine grained bioturbation, thin dark laminae (1-5mm), Gypsum nodules, abundant stylolites.

11239'-11241' Dolomitic Wackestone interbedded with Calcareous Wackestone, light grayish brown to dark grayish brown, very fine to fine grained, gypsum clast, replaced fossil fragments, horizontal to sub-horizontal fractures, abundant stylolites, visible porosity in the Dolomitic Wackestone.

11241'-11249' Calcareous Mudstone interbedded with Wackestone/Packstone and thin shale interbeds, grayish brown to dark grayish black and reddish brown, medium to fine grained, numerous replaced fossils, abundant stylolites and hairline fractures of horizontal to sub-horizontal orientation, sharp contact at base.

11249’-11252’ Sucrosic Dolomite, light to dark brown, fine to medium grains, replaced fossil fragments, horizontal to sub-horizontal fractures, abundant stylolites.

11252’-11261’ Sucrosic Dolomite and Floatstone in a Dolomitic Wackestone matrix, light grayish brown to dark yellowish brown, fine to medium grained, gypsum nodules, abundant horizontal to sub-horizontal hairline fractures, moldic porosity.

11261’-11265’ Sucrosic Dolomite and interclastic Dolomitic Mudstone/Dolomitic Wackestone, dark grayish brown to light brownish gray, fine to medium grained nodules, chicken wire texture in mudstone, inter crystalline poor space.

11265’-11268’ Micrite interbedded with Patterned Dolomite and Calcareous Wackestone, very fine to fine grained, tan, light brownish gray and dark gray, microbial laminae, coarsening upward of anhydrite replaced fossils, Anhydrite filled vertical and sub-vertical fractures.

11268’-11270’ Anhydrite interlaminated with Dolomitic Mudstone, dark grayish black to dark brown, very fine and crystalline, fragmented core.

Well # 7097 (3300700379)
SE, SE, sec 15, T142N, R100W, Billings County

W. H. Hunt Trust Estate

11305’-11306’ Mudstone/Wackestone, light grayish brown, microbreccia, peloids, birds eye structures and disturbed laminations.

11306’-11307’ Anhydrite interbedded with mudstone, gray and light brown, very fine to crystalline, laminated to thin bedded, felted.

11307’-11310’ Mudstone/Packstone and Anhydrite, gray to dark gray, grayish tan and black, very fine to fine and crystalline, peloids, desiccation cracks, Anhydrite is thin bedded.

11310’-11314’ Laminated Mudstone with Calcareous Packstone/Grainstone interbeds, light gray to dark brownish gray, very fine to fine grained, peloids, Anhydrite nodules, vertical to sub-vertical fractures.

11314’-11322’ Mudstone/Wackestone and Grainstone, gray to grayish black, fine to medium grained, peloids, thin microbial laminations, burrows, water escape structures, pyrite trace, Anhydrite and pyrite concentrated along dark laminations and burrows.

11322’-11324’ Wackestone and Floatstone, brownish gray to brown, very fine to fine grained, few burrows, laminated, pyrite, intraclasts, sutured solution seams, non-sutured solution seams.

11324’-11328’ Wackestone/Floatstone, grayish brown to brown, crystalline, stromatoporoids (hemispherical, tabular and spherical), coral.

11328’-11333’ Sucrosic Dolomite, medium to light brown, crystalline, mottled, few burrows, hemispherical stromatoporoids, visible pore space, suture solution seams, vertical hairline fractures.

11333’-11336’ Dolomitic Mudstone/Wackestone, grayish black to medium brown, very fine to fine grained and crystalline, slightly mottled and burrows, Anhydrite nodules.

11336'-11337' Floatstone, grayish black to grayish brown, very fine to crystalline, rounded and angular intraclasts, tabular anhydrite with breccia like fractures, sharp basal contact, wavy.

11337'-11339' Mudstone and Patterned Dolomite, light to dark gray, fine to medium grained, laminated silts and sand at top, mottled and burrowed, the laminae and Patterned Dolomite near bottom, core fragmented.

11339'-11339' Core missing.

11341'-11342' Anhydrite, gray to grayish black, very fine to fine, thinly laminated anhydrite and Mud.

11342'-11345' calcareous Mudstone, dark gray to grayish black and dark brown, very fine to fine grained, mottled, sutured solutions seams, anhydrite concentration around solution seams, horizontal to sub-horizontal hairline fractures.

11345'-11351' Calcareous Wackestone/Grain stone, light gray to dark gray and brownish gray, peloids, rounded and coated intraclasts, anhydrite nodules, locally mottled, cross laminations near bottom, burrows, sutured solution seams, stylolites.

11351'-11354' Floatstone in a Wackestone matrix, light gray to brownish gray, fine to medium grained, intraclasts, mottled and burrowed, solution seams (stylolites) are abundant, core fragments, abundant fossils.

11354'-11361' Wackestone/Packstone, medium to dark brown and gray to dark gray, peloids, intraclasts, burrowed, mottled, pyrite accumulation near bottom.

Well # 7102 (3300700381)
SW, SE, sec 27, T141N, R100W, Billings County

W. H. Hunt Trust Estate

11046’-11048’ Packstone/Grainstone, light grayish brown and dark gray, fine to medium grained, peloids, intraclasts, fossils.

11048’-11049’ Calcareous Mudstone/Wackestone, dark gray to black, very fine to fine grained, anhydrite replaced fossils, abundant solution seams (stylolites), vertical fractures.

11049’-11051’ Calcareous Wackestone/Packstone, brown to grayish brown and dark gray, fine to medium grained, anhydrite nodules an replacement, solution seams (stylolites), vertical fractures.

11051’-11058’ Calcareous Floatstone interbedded with Wackestone, light gray to grayish brown, fine to medium grained and crystalline, stromatoporoids, corals replaced by calcite and anhydrite, low magnitude and frequency to moderate magnitude and frequency.

11058’-11062’ Sucrosic Dolomite/Wackestone and Packstone, light to medium brown, very fine to crystalline, intraclasts, anhydrite replaced fossils, solution seams (stylolites).

11062’-11064’ Dolomitic Mudstone and Patterned Dolomite, tan to light brown, very fine to fine and crystalline, laminated, patterned, soft sediment and water escape structures at base, high amplitude stylolites.

11064’-11065’ Calcareous Mudstone, dark gray to grayish black, very fine to fine grained, intraclasts, laminated, stylolites.

11065'-11067' Calcareous mudstone interbedded with Anhydrite, tan to light gray and dark gray, very fine to fine grained and crystalline, finely laminated, solution seams, pyrite accumulation at bottom.

11067'-11070' Mudstone/Packstone interbedded with Anhydrite, light gray to dark brownish gray, very fine to crystalline, peloids, intraclasts and burrows, solution seams, vertical and sub-vertical hairline fractures, stylolites.

11070'-11076' Packstone/grainstone, light gray to brownish gray, fine to medium grained, peloids, brachiopods, burrowed, thin laminations, oncolites, graded bedding, anhydrite filled burrows, stylolites, solution seams.

11076'-11079' Wackestone/Packstone, light brown to gray, fine to medium grained brachiopods, coral, limestone, solution seams and stylolites, calcite replacement.

Well # 7438 (3300700474)
NE, NE, sec 28, T141N, R100W, Billings County

AL-Aquitaine Exploration, LTD.

11092'-11096' Calcareous Packstone/Grainstone, dark gray to light gray and dark brown, fine to medium grained, peloids, oncolites, rounded to sub-rounded intraclasts, few thinly bedded muds, solution seams, horizontal and vertical fractures.

11096'-11099' Calcareous Wackestone/Floatstone, brown to dark brown and light gray, very fine to fine grained, thin beds, burrowed, graded laminations, peloids, ostracods, solution seams, low amplitude low frequency stylolites.

11099’-11103’ Floatstone, gray/grayish brown, fine grained, solution seams, intraclasts, hemispheroidal and spheroidal stromatoporoids, corals.

11103’-11105’ Calcareous Wackestone/Packstone, grayish brown to brown, very fin to fine grains, solution seams, burrows, brachiopods, peloids, nodules.

11105’-11108’ Calcareous Floatstone, solution seams, stromatoporoid fragments, branched coral, recrystallized fossils, brachiopods.

11108’-11111’ Mudstone/Floatstone and Sucrosic Dolomite, brown to grayish brown, fine to medium grained crystalline, thin laminations, water escape structure, intraclasts, stromatoporoids, burrows, solution seams.

11111’-11112’ Mudstone and Patterned Dolomite, light gray to yellowish gray, fine to crystalline, laminated to cross laminated, pattered dolomite, microcrystalline, stromatolite at bottom of the interval.

11112’-11114’ Calcareous Mudstone/Floatstone, gray to dark gray, white to light gray (anhydrite), very fine to fine grained and crystalline, peloids, intraclasts, anhydrite nodules, brachiopods, solution seams.

11114’-11117’ Dolomudstone and Anhydrite interbedded with mudstone, gray to dark gray and brown, very fine and fine grained and crystalline, laminated to thin bedded dolomite, enterolithic and anhydrites, solution seams, oil stained shale.

11117’-11120’ Calcareous mudstone, brown to dark brown, very fine to fine grained, intraclasts, burrows, peloids, pyrite crystals, solution seams.

11120’-11122’ Calcareous Wackestone/Packstone, brownish gray to gray, intraclasts, peloids, brachiopods, low amplitude and high frequency stylolites.

Well # 7104 (3300700383)
SW, SE, sec 3, T142N, R100W, Billings County

W. H. Hunt Trust Estate

11357'-11357.8' Calcareous Mudstone/Wackestone, light brown to brown, very fine to fine grained, burrowed, brachiopod, peloids.

11357.8;-11360' Dolomitic Mudstone/Wackestone, gray and grayish brown to dark brownish black, very fine to fine, thinly laminated, brownish black shale, burrowed, intraclasts, anhydrite nodules (gypsum), solution seams.

11360'-11364' Wackestone/Packstone, light gray to grayish black, very fine to fine and crystalline, thinly bedded anhydrite, peloids, anhydrite nodule, solution seams near bottom, horizontal to sub-horizontal fractures.

11364'-11367' Anhydrite interbedded with Mudstone, light grayish brown to dark grayish black, crystalline to very fine, thinly laminated solution seams.

11367'-11369' Boundstone/Dolomitic Wackestone, very fine to fine and crystalline, thinly laminated, anhydrite nodules, thin sand lenses, rip up clasts, solution seams.

11369'-11371' Calcareous Wackestone/Packstone, brown to gray, fine to medium grained, thin bedded, peloids, brachiopods, corals, sand filled solution seams, escape structures, thin mud laminations at bottom.

11371'-11374' Anhydrite interbedded with Dolomitic Mudstone/Wackestone, light brown, brownish gray and grayish black, fine to medium grained and crystalline, thinly laminated, thin sandy beds near bottom, anhydrite nodule, fenestral bedding.

11374'-11375' Mudstone /Wackestone, dark gray to black, thinly bedded, microbial laminations, burrows near bottom, pyrite in solution seams.

11375'-11377' Dolomitic Wackestone/Packstone, brown to light brown, fine to very fine grained, microbial laminae, gypsum replaced fossils, coral, solution seams.

11377'-11382' Anhydrite interbedded mudstone, light brown to dark brownish black, crystalline to fine grained, felted laminations, load cast, microbial laminae.

11382'-11386' Calcareous Wackestone/Packstone, gray to dark grayish black, fine grained and crystalline, intraclasts, peloids, brachiopods, recrystallized fossils, mottled, coral, pyrite around fossils, solution seams.

11386'-11391' Mudstone/Dolomitic Wackestone, brown and light brown to light gray and dark gray, very fine to fine grained, interbedded mud and patterned Dolomite, rip up clasts, microbial laminations, burrows, peloids, anhydrite nodules, anhydrite bed at 11389' to 11390'.

11391'-11395' Dolomitic Wackestone/Boundstone with Anhydrite interbeds. Brownish gray to brown and black, very fine grained to crystalline, microbial laminations, stromatoporoids, intraclasts, soft sediment deformation, brachiopods (replaced by anhydrite, Dark anhydrite bed (11393'-11394') calcite filled solution seams.

11395'-11397' Calcareous Wackestone, gray to dark gray, very fine to fine grained, finely laminated, peloids, branched coral, solution seams, vertical and horizontal hairline fractures.

11397'-11400' Calcareous Wackestone/Packstone, light brown to brownish gray, fine to medium grained, thinly laminated, burrowed, brachiopods, peloids, solution seams, low frequency medium amplitude stylolites, hairline fractures.

11400'-11404' Wackestone/Packstone, dark gray to black and brownish gray, fine to medium grained, peloids, brachiopods, anhydrite replaced fossils appear to be aligning in some locations, branching corals, solution seams, hairline fractures, pyrite near solution seams.

Well # 7351 (3300700444)
SE, NE, sec 21, T142N, R100W, Billings County

W. H. Hunt Trust Estate

11262'-top Laminated Dolomitic Mudstone, gray, very fine to fine grained.

11262'-11263' Calcareous Packstone/Boundstone, light gray to dark brown, very fine to fine grained and crystalline, few laminations, solution seams filled with silt or sand, peloids and other fossils, fractures in all directions, stromatoporoids near bottom.

11263'-11266' Calcareous Wackestone/Packstone and Boundstone, light gray to dark brown, very fine to fine grained and crystalline, few laminations, solution seams, filled with silt/sand, peloids and other fossils, fractures in all directions, stromatoporoids near bottom.

11269'-11273' Anhydrite interbedded with Mudstone, gray to grayish brown, very fine and crystalline, wavy laminations, laminar bedding.

11273’-11277’ Calcareous Wackestone/Packstone, dark brownish gray to gray, fine to medium grained and crystalline, sharp planer contact, few laminations, peloids, replaced fossils, intraclasts, thin shaly interval near top, sand size grains near bottom of interval, solution seams, hairline fractures.

11277’-11278’ Dolomitic Mudstone and Patterned Dolomite, gray to brownish bray, fine to medium grained and crystalline, laminated mud with intraclasts, soft sediment deformation, sharp irregular contact at bottom, stromatolite or microbial at bottom.

11278’-11282’ Dolomitic Mudstone/Packstone interbedded with Anhydrite, light brownish gray to dark brownish gray to black, very fine to medium grained and crystalline, thin laminations, soft sediment deformation, possible patterned dolomite intraclasts, microbial laminations.

11282’-11285’ Dolomitic Wackestone/Packstone and Boundstone, light gray to tan, very fine grained, microbial laminae, water escape structure over laying crystalline gypsum bed, soft sediment deformation, stromatoporoid, intraclasts.

11285’-11291’ Calcareous Mudstone/Wackestone, brown to dark brown, fine to medium grained and crystalline, thinly laminated peloids, brachiopods, solution seams, hairline fractures.

11291’-11297’ Wackestone/Packstone, gray to dark gray, very fine to fine grained, interbedded mudstone, intraclasts, rip-up clasts, brachiopods, forked coral, peloids, vertical and horizontal fractures, solution seams.

11297’-11299’ Floatstone/Mudstone, light grayish brown, fine to very fine grained, peloids, corals, intraclasts, wavy laminations, solution seams.

11299’-11303’ Calcareous Floatstone to Rudstone, light brownish gray to dark gray, fine to medium grained, stromatolites, stromatoporoids, corals, peloids, solution seams.

11303’-11303.2’ Wackestone, brown, fine to medium grained, intraclasts, peloids, solution seams.

11303.2’-11300.6’ Missing core

11304’-11305’ Calcareous Wackestone, grayish brown, fine to medium grained, stromatolite fragment, brachiopods, sand filled solution seams, moderate frequency and amplitude stylolites.

11305’-11309’ Calcareous Floatstone/Rudstone, gray to light gray and brown, fine to medium grained and crystalline, peloids, stromatoporoids and stromatolites, corals and brachiopods, moderate amplitude and frequency stylolites.

11309.5’-11309.9’ Missing core

11309.9’-11313’ Calcareous Wackestone/Sucrosic Dolomite, grayish brown, fine to crystalline, solution seams, mostly massive, anhydrite nodule.

11313’-11315’ Dolomitic Wackestone/Patterned Dolomite, yellowish brown to gray, very fine to crystalline, solution seams, slight bedding, chicken wire structure near bottom, calcareous mudstone near bottom.

11315.3’-11315.6’ Missing core

11315.6’-11318’ Anhydrite with interbedded Dolomudstone, dark grayish black to light gray, very fine and crystalline, water escape structures, wavy bedding, microbial bedding at bottom.

Well # 7776 (3300700564)
SE, SE, sec 3, T141N, R100W, Billings County

Al-Aquitaine & Gas Producing Enterprises

11107’-11108’ Calcareous Wackestone, brownish gray to dark gray, very fine to fine grained, peloids, lineation of fossils, solution seams.

11108’-11113’ Calcareous Wackestone/Packstone, grayish brown to brown, fine to medium grained, peloids, bivalve fragments, brachiopods, muddy nodules, vuggy porosity, bivalve fragments.

11114’-11116’ Calcareous Wackestone/Packstone, yellow brown to gray, fine to medium grained, mud nodule, peloids, filled horizontal fractures, solution seams, low frequency low amplitude stylolites.

11116’-11120’ Calcareous Wackestone/Packstone, grayish black to yellowish brown, fine grained, desiccation cracks, exposure cracks, bivalve fragments, peloids, stromatoporoid fragments, anhydrite filled fractures, corals, oncoids, solution seams, vuggy porosity.

11120’-11123’ Calcareous Mudstone/Sucrosic Dolomite, light to medium brown, fine to medium grained and crystalline, oncoids, peloids, bivalve fragments, vuggy porosity, dolomitic at bottom, solution seams.

11123’-11126’ Dolomitic Mudstone/Wackestone and Patterned Dolomite, light to dark gray, fine grained and crystalline, very thin laminations, soft sediment deformation, solution seams, stylolites, calcareous at base.

11126’-11129’ Interbedded Anhydrite and Dolomudstone, dark gray and brown, very fine grained and crystalline, thinly bedded, desiccation cracks, wavy bedding, hairline horizontal fractures.

11129’-11133’ Calcareous Mudstone, dark brown to black, very fine to fine grained, desiccation cracks, exposed surface, shaly lamination, mud nodules and rip up clasts, water escape structures.

11133’-11136’ Calcareous Mudstone to Wackestone, brown to gray brown, very fine to fine grained, oncoids, low to medium amplitude and frequency stylolites, vuggy porosity.

Well # 8456 (3300700686)
NE, NE, sec 16, T141N, R100W, Billings County

Al-Aquitaine & Gas Producing Enterprises

11030’-11030.5’ Calcareous Wackestone to Packstone, gray to blackish gray, fine to medium grained, desiccation surface, oncoids, brachiopods, solution seams, horizontal to sub-horizontal hairline fractures.

11030.5’-11033’ Calcareous Wackestone to Packstone, gray to brownish gray, fine to medium grained, anhydrite nodules, peloids, rip up clasts and exposed surface, sandy interval near bottom, solution seams, medium amplitude and frequency stylolites.

11033'-11035' Calcareous Mudstone and Floatstone/Rudstone, blackish gray to brownish gray, fine to medium grained, stromatoporoids, stromatolites, brachiopods, solution seams, vuggy porosity, peloids, bivalve fragments.

11035'-11040' Calcareous Mudstone to Wackestone, grayish brown to gray, fine to medium grained, thin mud lenses, soft sediment deformation, mudcracks, oncoid, bivalve fragments.

11040'-11042' Calcareous Wackestone to Packstone, brownish gray to gray, corals, peloids, solution seams, vuggy porosity.

11042'-11046' calcareous Wackestone to Packstone, brownish gray to gray, fine to medium grained and crystalline, exposed surface, peloids, oncoids, brecciation near bottom, brachiopods, soft sediment deformation, sucrosic dolomite near base.

11046'-11047.5' Dolomitic Mudstone to Patterned Dolomite, grayish tan, very fine grained to crystalline, massive, slight dewatering structures.

11047.5'-11048' Calcareous Mudstone/Wackestone, dark gray to black, very fine to fine grained, filled hairline structures, solution seams, pyrite crystals.

11048'-11049' Patterned Dolomite and Dolomitic Mudstone, grayish tan to brownish gray, very fined grained and crystalline, vertical fractures.

11049'-11051' Anhydrite interbedded with Dolomudstone, grayish black to grayish brown, very fine grained and crystalline, finely bedded, vertical and horizontal hairline fractures, brecciation.

11051'-11053' Calcareous Mudstone/Wackestone, Dark brown to brownish black, very fine to fine grained, thin laminations, rip up clasts and water escape structures, hairline factures.

11053'-11060'Calcareous Wackestone/Packstone, dark brown and gray, very fine to fine grained, peloids, bivalve fragments, solution seams, low amplitude moderate frequency stylolites, minor vuggy porosity.

Appendix B
Core Analysis

Well #859 (3300700016)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11122	5.44	13.1	0.0	-9999	Ls
11123	0.82	9.3	0.0	-9999	Ls
11124	0.18	3.6	0.0	22	Ls
11125	0.06	3.4	0.0	9.7	Ls
11126	0.01	4.0	0.0	10.5	Ls
11127	-0.01	4.0	0.0	20	Ls
11128	-0.01	2.6	0.0	41.2	Ls
11129	0.02	3.9	0.0	39	Ls
11130	0.01	2.2	0.0	38.6	Ls
11131	-0.01	2.9	0.0	26.9	Ls
11132	-0.01	1.2	0.0	20.8	Ls
11133	-0.01	0.8	0.0	18.8	Ls
11134	0.09	2.1	0.0	19.5	Ls
11135	-0.01	0.9	0.0	44.4	Ls
11136	3.1	1.0	0.0	24	Ls
11137	-0.01	1.6	0.0	23.8	Ls
11138	0.02	2.2	0.0	20.9	Ls
11139	0.01	1.5	0.0	32	Ls
11140	0.01	1.4	0.0	33.6	Ls
11141	0.01	1.8	0.0	43.9	Ls
11142	4.29	2.2	0.0	35.5	Do
11143	0.36	8.1	0.0	16	Do
11144	-0.01	2.0	7.5	57.5	Do
11145	0.12	8.5	2.7	34.4	Do
11146	0.07	8.2	0.0	24.4	Do
11147	0.03	0.9	0.0	18.9	Do
11148	0.97	2.8	0.0	11.2	Do
11149	0.05	2.2	0.0	20	Do
11150	-0.01	1.6	0.0	15.6	Ls
11151	0.01	2.6	0.0	12.1	Ls
11152	-0.01	1.2	0.0	24.2	Ls
11153	-0.01	0.9	0.0	53.3	Ls
11154	-0.01	1.8	-9999	85	Ls
11155	-0.01	0.5	-9999	87.9	Ls
11156	0.35	0.7	-9999	75.4	Do
11157	0.01	4.6	0.00	24.1	Do

11158	0.46	11.3	0.00	34.4	Do
11159	0.01	3.8	0.00	56.3	Ls
11160	16	12.2	0.00	13.3	Do
11161	-0.01	1.6	0.00	33.1	Do
11162	-0.01	0.7	0.00	62.9	Ls
11163	-0.01	0.7	0.00	75.7	Ls
11164	0.05	1.4	0.00	77.9	Ls
11165	0.07	7.7	0.00	16.4	Do
11166	0.1	6.6	0.00	20.8	Do
11167	0.13	1.0	0.00	30	A
11168	-0.01	0.9	0.00	20	A
11169	0.08	1.0	-9999	87.2	Do, Shy
11170	-0.01	0.4	0.00	80.3	Do
11171	-0.01	1.2	0.00	33.3	Do
11172	0.01	0.6	0.00	26.6	A
11173	-0.01	0.9	0.00	17	A
11174	0.01	0.7	0.00	22.8	A
11175	-0.01	0.8	0.00	20	A
11176	-0.01	1.1	0.00	75.4	Do, A
11177	0.03	4.2	0.00	25.7	Do, A
11178	0.2	5.0	0.00	9.6	Do
11179	-0.01	5.0	0.00	11	Do
11180	-0.01	3.6	0.00	61.7	Ls
11181	0.01	1.3	0.00	32.3	Do
11182	0.72	13.4	5.90	45.9	Do
11183	0.01	5.3	0.00	31.7	Do
11184	0.02	8.9	0.00	28.3	Do
11185	0.01	9.7	0.00	47.5	Do
11186	-0.01	1.9	0.00	37.4	A
11187	-0.01	1.2	0.00	30.5	A
11188	-0.01	0.7	0.00	11.4	A
11189	-0.01	0.7	0.00	15.4	A
11190	-0.01	0.8	0.00	11.3	Do
11191	0.06	5.9	0.00	10.5	Do
11192	0.03	4.8	0.00	40.2	Do
11193	0.05	6.8	0.00	10.3	Do
11194	0.05	5.0	2.80	13.4	Do
11195	-0.01	2.5	0.00	26	Do
11196	-0.01	0.4	0.00	30.4	A
11197	-0.01	0.3	0.00	28.7	A
11198	0.19	0.4	15.00	77.5	A
11199	0.04	2.4	0.00	53.3	Do

11200	0.03	2.8	0.00	29.3	Do
11201	0.34	1.6	0.00	5.5	Do
11202	0.08	1.7	0.00	50.6	Do
11203	0.26	2.4	0.00	57.5	Do
11204	-0.01	1.7	0.00	48.8	Do
11205	-0.01	1.2	0.00	24.2	Ls
11206	-0.01	0.9	0.00	88.9	Ls
11207	0.01	0.6	0.00	15	Ls
11208	-0.01	0.5	0.00	18	Ls
11209	0.01	0.8	0.00	11.3	Ls
11210	0.01	2.4	0.00	21.3	Ls
11211	0.02	2.0	0.00	88.5	Ls
11212	0.02	4.4	0.00	41.8	Ls
11213	0.02	2.6	0.00	91.9	Ls
11214	0.07	2.1	0.00	95.5	Ls
11215	0.03	4.8	0.00	14.2	Ls
11216	0.88	10.1	0.00	30.8	Ls
11217	3.68	11.7	9999.00	45.3	Ls
11218	2.3	9.1	0.00	55.8	Ls
11219	1.77	9.8	0.00	50.2	Ls
11220	1.59	7.6	0.00	41.6	Ls
11221	0.04	3.7	0.00	33.2	Ls
11222	1.31	9.3	0.00	26.8	Ls
11223	6.87	12.5	0.00	49.4	Ls
11224	8.25	13.9	0.00	53.4	Ls
11225	1.37	9.9	0.00	50.1	Ls
11226	36	16.1	2.30	11.9	Ls
11227	33	16.1	4.30	43.4	Ls
11228	34	12.7	0.00	26.2	Ls
11229	18	14.6	0.00	33.2	Ls
11230	0.21	18.5	0.00	46.3	Ls
11231	0.17	5.7	0.00	66.1	Ls
11232	0.04	0.5	0.00	16.8	A
11233	0.01	0.3	0.00	26.7	A
11234	0.01	0.2	0.00	20.4	A
11235	0.02	0.4	0.00	25.7	Ls
11236	0.03	0.9	0.00	15.4	Ls
11237	0.06	1.0	0.00	12	Ls
11238	0.01	0.9	0.00	8.9	Ls
11239	0.01	0.3	0.00	86.7	Ls

Well #6378 (3300700236)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11196	0.01	1.1	0.00	60.6	Do
11197	2.00	1.4	0.00	78.6	Do
11198	2.50	1.7	0.00	38.8	Do
11199	0.01	1.7	0.00	40	Do
11200	0.03	1.7	0.00	40.6	Do
11201	0.03	3.2	0.00	75	Do
11202	0.65	3.3	0.00	66.4	Do
11203	0.27	2.3	0.00	29.3	Do
11204	2.90	2.0	0.00	33.3	Do
11205	0.32	3.4	0.00	59.3	Do
11206	0.02	1.8	0.00	48.9	Do
11207	0.26	2.1	0.00	31.3	Ls
11208	2.40	1.4	0.00	47.8	Ls
11209	0.04	1.6	0.00	41.1	Ls
11210	0.39	0.8	0.00	83.9	Ls
11211	0.03	1.0	22.20	66.5	Ls
11212	1.40	0.8	0.00	84.3	Ls
11213	2.00	1.4	0.00	47.7	Ls
11214	1.30	1.3	0.00	68.7	Ls
11215	0.03	1.4	15.20	45.5	Ls
11216	27.00	0.9	12.20	73.1	Ls
11217	1.30	1.3	0.00	20.6	Ls
11218	1.20	4.9	2.20	34.9	Ls
11219	9.30	14.5	0.00	50.3	Ls
11220	6.20	12.5	0.80	61.2	Ls
11221	5.20	10.9	0.90	93.2	Ls
11222	15.00	10.4	0.00	30.9	Ls
11223	0.33	1.2	8.70	69.6	Ls
11224	0.40	4.9	0.00	51.4	Ls
11225	13.00	12.8	0.00	35.1	Do
11226	0.33	21.1	0.40	58.9	Do
11227	72.00	22.2	0.40	72	Do
11228	30.00	12.3	0.00	52.2	Do
11229	116.00	15.1	0.00	74.5	Do
11230	32.00	14.4	0.00	62.1	Do
11231	33.00	13.4	0.00	44.9	Do
11232	12.00	13.5	0.00	68.3	Do
11233	0.71	5.6	0.00	33.7	Do
11234	0.01	0.9	0.00	73.5	Do

11235	0.62	0.9	0.00	70	Do
11236	3.10	2.0	0.00	76	Do
11237	2.80	1.1	0.00	80	Ls
11238	0.05	1.3	0.00	49.6	Ls
11239	0.04	1.9	0.00	35.1	Ls
11240	0.17	1.6	0.70	40.4	Ls
11241	0.03	2.0	5.30	31.6	Ls
11242	0.05	4.4	0.00	66.1	Ls
11243	4.60	3.7	0.00	79.6	Ls
11244	0.05	2.3	0.00	46.3	Ls
11245	0.40	2.0	0.00	52.8	Ls
11246	0.76	4.6	0.00	63.9	Ls
11247	0.59	3.6	0.00	71.1	Ls
11248	0.06	4.4	0.00	52.4	Ls
11249	0.16	5.3	2.00	68.3	Ls
11250	0.85	3.9	0.00	55.1	Ls
11251	0.04	3.6	0.00	47.9	Ls
11252	0.03	2.2	0.00	50.6	Ls
11253	0.04	1.8	0.00	49.3	Ls
11254	0.03	1.5	0.00	43.3	Ls
11255	0.47	1.7	0.00	38	Ls

Well # 6543 (3300700259)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11242	0.01	1.6	6.80	40.9	Ls
11243	0.01	1.9	5.90	35.2	Do
11244	0.02	2.2	5.00	50.1	Do
11245	1.6	1.9	5.90	35.2	Do
11246	0.37	2.9	3.70	22.1	Do
11247	0.01	2.3	0.00	29.3	Do
11248	0.1	2.5	0.00	26.4	Do
11249	0.09	3.3	0.00	20	Do
11250	3.5	2.1	0.00	32.3	Ls
11251	10	1.6	0.00	41.9	Do
11252	0.01	3.5	3.10	18.5	Do
11253	0.9	2.1	0.00	44.1	Do
11254	2.9	1.8	6.10	36.5	Ls
11255	0.02	2.5	4.30	25.9	Ls
11256	0.01	2.7	4.10	24.4	Ls
11257	0.01	3.1	6.90	20.6	Ls
11258	0.02	4.4	2.40	14.6	Ls

11259	0.02	2.9	3.70	22.1	Ls
11260	0.03	1.1	0.00	61.1	Ls
11261	3.6	1.2	0.00	53.3	Ls
11262	0.06	1.1	10.00	60	Ls
11263	1.1	1.4	0.00	47.3	Ls
11264	0.01	1.3	8.40	50.2	Ls
11265	0.01	1.6	13.60	54.2	Ls
11266	0.36	2.0	11.00	32.9	Ls
11267	0.51	4.6	4.50	36.1	Ls
11268	0.49	4.5	0.00	27.8	Ls
11269	12	1.8	5.90	35.3	Ls
11270	0.02	1.3	8.10	32.5	Ls
11271	1.1	1.4	15.70	47.1	Ls
11272	0.05	7.2	1.40	34.2	Ls
11273	0.87	8.0	0.00	50.5	Ls
11274	1.6	4.3	0.00	51.6	Ls
11275	3.7	4.5	2.40	37.9	Ls
11276	1.7	10.5	1.00	72.9	Ls
11277	0.4	4.1	0.00	31.4	Ls
11278	0.37	3.7	0.00	70.1	Do
11279	0.06	13.5	0.00	70.4	Do
11280	0.42	1.0	0.00	68.7	Ls
11281	0.24	0.9	12.50	75.1	Do
11282	2	1.3	0.00	54.1	Do
11283	0.12	1.6	0.00	39.3	Ls
11284	0.04	1.1	0.00	59	Ls
11285	0.76	0.7	0.00	90.1	Ls
11286	0.01	0.7	0.00	88.7	Ls
11287	0.64	0.8	12.70	76.1	Ls
11288	0.01	0.8	12.90	77.37	Ls
11289	0.01	1.3	0.00	68.8	Ls
11290	0.04	3.5	0.00	30.6	Ls
11291	0.07	3.0	0.00	35.1	Ls
11292	0.01	-9999.0	1.30	35.5	Ls
11293	0.01	-9999.0	2.70	62.5	Ls
11294	0.01	-9999.0	1.80	44.5	Ls
11295	0.37	0.18	2.30	28.4	Ls
11296	2.2	1.1	0.30	34	Ls
11297	0.01	-9999.0	1.30	51.6	Ls
11298	0.37	0.04	2.40	1.9	Ls
11299	0.02	0.02	1.90	0.2	Ls

Well #6647 (3300700275)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11585	0.01	8.1	11.30	67.9	Ls
11586	0.45	7.3	8.30	66.4	Ls
11587	8.1	6.2	7.70	46.3	Do
11588	0.04	5.1	10.10	60.4	Ls
11589	0.49	-9999	10.30	62	Do
11590	3.8	-9999	8.20	49.3	Do
11591	0.3	-9999	2.40	42.6	Do
11592	0.39	-9999	2.10	41.6	Do
11593	0.06	-9999	4.00	63.8	Do
11594	0.02	-9999	8.80	70.2	Ls
11595	0.14	-9999	5.90	35.4	Do
11596	0.21	-9999	0.00	76.8	Do
11597	0.03	-9999	6.50	52.4	Do
11598	0.05	-9999	7.10	57.1	Do
11599	1.8	-9999	9.90	79.3	Ls
11600	0.02	-9999	35.90	43.1	Ls
11601	0.02	1	9.80	58.7	Ls
11602	0.48	2.6	15.30	61.4	Ls
11603	0.03	0.9	9.90	59.6	Ls
11609	0.53	1.5	5.50	55.1	Ls
11610	0.02	4.6	3.10	50.1	Ls
11611	0.43	6.9	1.40	27.7	Ls
11612	0.05	2.9	1.20	30.2	Ls
11613	0.47	4.6	2.50	50.9	Ls
11614	0.16	6.7	1.20	27.9	Ls
11615	0.4	5.1	1.50	21.3	Ls
11616	0.04	4.5	2.80	55.9	Ls
11617	0.23	4.7	2.30	41.1	Ls
11618	0.06	2	2.80	33.8	Ls
11619	0.02	5.1	4.70	18.7	Ls
11620	0.37	5.6	4.80	47.7	Ls
11621	0.49	4.3	2.10	71.8	Ls
11622	0.27	3.9	2.10	51.3	Do
11623	5.5	13	0.40	77.5	Do
11624	8.2	18.6	0.50	86.4	Do
11625	0.03	10.2	1.20	34.8	Do
11626	0.35	6.5	0.80	71.4	Do
11627	1	1.2	0.00	24.9	Do
11628	0.75	0.1	0.00	66.4	Do

11629	0.27	0.7	0.00	44.9	Do
11630	0.05	2.1	4.70	19	Do
11631	0.38	0.8	0.00	21.4	Do
11632	0.02	1	0.00	48	Do
11633	0.1	1.1	0.00	43.3	Do
11634	0.41	1	0.00	40.4	Ls
11635	0.02	0.6	0.00	86.5	Ls
11636	0.02	1.5	0.00	50.4	Ls
11637	0.03	2.4	10.00	80	Ls
11638	0.04	1.8	5.00	20	Ls
11639	0.02	1.1	0.00	76.6	Ls
11640	0.03	4.1	12.00	71.7	Ls
11641	31	3	5.90	59.2	Ls
11642	0.03	3.7	0.00	88.1	Ls
11643	0.05	5.2	0.00	58.2	Ls
11644	0.06	5.4	0.00	40.2	Ls
11645	0.02	3.8	0.00	59.1	Ls
11646	0.03	1.9	0.00	72.8	Ls
11647	0.03	0.7	0.00	76.8	Ls
11648	0.04	1.2	8.40	67.5	Do
11649	0.03	1	0.00	56.7	Do
11650	0.03	1.1	0.00	89.2	Do
11651	0.98	0.7	0.00	72.8	Do
11652	0.05	4.5	15.70	62.8	Do
11653	0.22	1	0.00	40.4	Do
11654	0.12	2.2	0.00	79.8	Do
11655	0.05	1.1	0.00	55	Do
11656	1.4	1	0.00	38.8	Do
11657	1	1	0.00	42.7	Do
11658	0.03	2	0.00	66	Do
11659	0.09	0.8	0.00	79.2	Do
11660	11	0.8	17.40	54.5	Do
11661	0.09	0.6	0.00	32.7	Do
11662	0.19	4.7	0.00	30.4	Do
11663	0.04	1	0.00	52.1	Do
11664	0.05	1	3.90	69.4	Do
11665	0.05	1.6	0.00	17.6	Do
11666	0.15	0.7	8.40	33.7	Do
11667	0.05	2.5	0.00	60.3	Do
11668	0.09	3.2	0.00	88.7	Do

Well #6919 (3300700326)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10938	15	1.3	17.20	17.2	Lm
10939	0.06	0.5	19.90	39.9	Lm
10940	0.05	4.9	0.00	60	Lm
10941	0.08	6	0.00	52.8	Lm
10942	0.05	3.8	0.00	72.7	Lm
10943	0.08	2.4	8.80	26.3	Lm
10944	0.29	6.8	10.90	46.8	Do
10945	0.26	9.3	2.20	39.4	Do
10946	0.12	8.2	1.20	42.4	Do
10947	0.06	5.6	0.00	52.5	Do
10948	0.83	2.5	4.30	51.7	Do
10949	0.09	7.6	1.40	40.7	Do
10950	0.77	8.6	1.20	42.6	Do
10951	2.9	14.5	12.10	30.9	Do
10952	0.2	10.3	12.00	24.1	Do
10953	4.4	3.1	3.50	28.3	Do
10954	1.6	9.5	23.80	49.8	Do
10955	0.13	7.2	1.50	70.1	Do
10956	0.86	12.9	0.80	67.3	Do
10957	0.04	1.8	0.00	73.1	Do
10958	0.03	0.6	0.00	34.9	Lm
10959	0.03	0.7	0.00	35.3	Anhy
10960	0.01	0.9	0.00	27	Anhy
10961	0.05	0.5	0.00	42	Lm
10962	0.02	1.8	0.00	59	Lm

Well #6995 (3300700349)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10940	0.01	1	0.00	48.1	Do
10941	0.02	1.3	0.00	52.6	Do
10942	0.03	5.5	0.00	54.7	Do
10943	0.17	1.4	0.00	47.9	Do
10944	0.01	1.8	24.00	24	Do
10945	0.01	1	0.00	42.6	Do
10946	0.01	0.9	0.00	49.5	Do
10947	0.01	1.8	12.40	37.3	Ls
10948	0.01	1.5	0.00	43.9	Ls

10949	0.01	1.6	0.00	55	Ls
10950	0.01	1	0.00	90.2	Ls
10951	0.01	1.4	31.60	63.2	Ls
10952	0.02	1.9	0.00	57.4	Ls
10953	0.07	1.7	24.90	49.8	Ls
10954	0.01	1.6	0.00	40.5	Ls
10955	0.06	1.7	0.00	51.1	Ls
10956	0.15	5.5	0.00	38.5	Ls
10957	0.75	5.4	0.00	43.2	Ls
10958	1.1	7	0.00	53.6	Ls
10959	0.2	8.2	0.00	52	Ls
10960	0.12	8.2	0.00	45	Ls
10961	0.25	1.3	0.00	33.6	Ls
10962	0.44	8.6	0.00	69.5	Ls
10963	46	14.4	10.90	36.8	Do
10964	44	14.8	16.00	26.6	Do
10965	29	13.9	11.60	36.2	Do
10966	1.7	4.7	0.00	54.7	Do
10967	0.9	8.2	0.00	52.7	Do
10968	106	21	14.80	33.1	Do
10969	0.74	17	9.10	68.3	Do
10970	50	18.7	2.10	62.6	Do
10971	0.06	5.1	0.00	81.2	Do
10972	0.06	2.1	0.00	72.3	Do
10973	0.08	1.4	0.00	95.8	Do
10974	0.25	0.8	0.00	87.8	Do
10975	0.01	1	0.00	90.2	Do

Well #7086 (3300700372)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10937	2.7	0.5	0.00	82.3	Do
10938	0.02	1.8	0.00	24.7	Do
10939	0.33	0.8	0.00	50.7	Do
10940	0.01	1	0.00	42.6	Ls
10941	0.48	1.7	0.00	38.9	Do
10942	0.01	2.1	0.00	50.8	Do
10943	0.01	0.7	0.00	62.7	Ls
10944	0.02	10	14.50	22.8	Do
10945	0.02	9.5	13.20	17.5	Do
10946	0.01	2.5	0.00	87.3	Ls

10947	0.01	3.3	0.00	33.5	Do
10948	0.05	0.9	0.00	51.3	Ls
10949	0.01	0.9	0.00	68.9	Ls
10950	220	19.4	0.00	36.6	Do
10951	133	14.7	14.90	32.4	Do
10952	0.01	1.9	0.00	80.6	Do
10953	0.01	1.2	0.00	90.1	Ls
10954	0.01	1.8	0.00	23.9	Ls
10955	0.45	2.1	0.00	39.5	Ls
10956	0.23	4.8	0.00	21.9	Ls
10957	11	13.8	9.90	11.3	Ls

Well #7091 (3300700375)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10956	0.01	1.6	13.80	41.4	LS
10957	15	1.1	19.70	59.1	LS
10958	0.02	1.6	13.50	40.6	LS
10959	0.01	1.8	23.90	35.9	LS
10960	0.02	1.5	28.70	43.1	LS
10961	0.01	1.6	26.20	39.3	LS
10962	0.01	1.7	12.30	49.4	LS
10963	0.01	1.9	11.00	65.9	LS
10964	0.25	1.7	12.80	51.4	LS
10965	0.62	5.6	7.50	37.5	LS
10966	0.43	3.4	0.00	18.7	LS
10967	2.6	1.6	0.00	41.6	LS
10968	0.6	2.4	8.60	43.2	LS
10969	0.68	6.3	6.60	39.3	LS
10970	0.39	5.2	4.00	24.1	LS
10971	0.33	8.6	4.90	31.5	LS
10972	48	3.8	0.00	49.2	LS
10973	0.88	6.3	3.30	49.1	LS
10974	0.89	5.3	0.00	11.6	LS
10975	1.3	4.9	4.40	22.1	LS
10976	7.4	11.6	1.70	36.6	LS
10977	0.16	8.3	0.00	85.5	DOL
10978	2.9	8.1	2.50	80.7	LS
10979	0.01	8.9	0.00	69.8	LS
10980	0.49	1.2	0.00	74.3	DOL
10981	0.35	1.5	0.00	61.5	DOL

10982	0.01	1.4	33.60	50.4	DOL
10983	0.01	1.1	0.00	58.9	LS
10984	0.01	0.8	0.00	77.3	LS
10985	0.01	1.2	0.00	72.5	LS
10986	0.01	1.5	14.30	57.2	LS
10987	0.01	1.1	0.00	65.1	LS
10988	0.01	1.2	17.60	52.9	LS
10989	0.01	1.1	0.00	76.6	LS

Well #7097 (3300700379)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11305	0.01	0.8	0.00	87	DOL
11306	0.01	0.3	0.00	69.1	ANHY
11307	0.01	0.3	0.00	72.9	ANHY
11308	0.01	0.4	0.00	56.4	ANHY
11309	0.01	1.5	0.00	74.6	ANHY
11310	0.01	0.8	0.00	87.2	DOL
11311	0.14	2	27.00	32.4	LS
11312	0.63	1.3	16.80	50.3	LS
11313	15	12.5	7.30	30.9	DOL
11314	0.73	2.1	0.00	51.1	LS
11315	0.12	1.3	8.10	48.7	LS
11316	0.01	0.3	0.00	63.1	LS
11317	0.01	0.3	0.00	69.4	LS
11318	0.01	0.3	0.00	65.1	LS
11319	0.01	0.8	0.00	83.2	LS
11320	0.01	1	0.00	90.8	LS
11321	0.01	0.3	0.00	65.6	LS
11322	0.01	1	0.00	88.9	LS
11323	7.6	6.6	0.00	59.8	LS
11324	0.15	0.9	0.00	55.9	LS
11325	1.1	8	0.00	47	LS
11326	0.03	8.4	0.00	48.4	LS
11327	0.21	10	0.00	54.5	LS
11328	10	8.2	0.00	50.1	LS
11329	0.77	9.5	0.00	46.4	LS
11330	0.92	8.2	0.00	63.2	LS
11331	13	10.6	0.00	56.5	LS
11332	1.9	12.8	0.00	58.2	LS
11333	7.4	12.1	7.60	34	DOL

11334	13	11.5	6.50	17.3	DOL
11335	52	16.2	7.20	33.8	DOL
11336	49	17.4	4.90	58	DOL
11337	3.2	14.5	0.00	66.8	DOL
11338	0.02	11	0.00	62	DOL
11341	0.01	0.3	0.00	72.6	ANHY
11342	0.01	0.3	0.00	69.4	LS
11343	0.01	0.3	0.00	71.6	LS
11344	0.01	0.3	0.00	70	LS
11345	0.01	0.3	0.00	73.5	LS
11346	0.01	0.5	0.00	83.2	LS
11347	0.01	0.5	0.00	82.8	LS
11348	0.01	1.6	0.00	94.2	LS
11349	0.01	0.9	0.00	91.3	LS
11350	0.01	0.7	0.00	88.3	LS
11351	0.01	1.4	0.00	93.4	LS
11352	0.01	1.9	5.60	90.1	LS
11353	0.01	1.2	9.60	76.9	LS
11354	0.01	0.3	0.00	70.3	LS
11355	0.01	0.3	0.00	70.3	LS
11356	0.01	0.7	0.00	88.6	LS
11357	0.01	0.5	0.00	84.2	LS
11358	0.01	0.5	0.00	85.2	LS
11359	0.01	0.5	0.00	84.8	LS
11360	0.01	0.5	0.00	84.6	LS

Well #7102 (3300700381)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11046	0.02	5.7	0.00	54.5	DOL
11047	0.03	4.3	4.90	59	LM
11048	0.03	1	10.30	41.3	LM
11049	0.03	1.4	0.00	62.8	DOL
11050	0.7	2.9	0.00	66.2	LM
11051	0.04	4.9	0.00	37.9	LM
11052	0.03	5.7	0.00	46.6	LM
11053	6.5	2.3	0.00	63.4	LM
11054	0.06	0.4	0.00	48	LM
11055	0.03	1.3	0.00	65.4	LM
11056	0.03	2.3	9.10	45.5	LM
11057	0.04	5.5	0.00	45.1	LM

11058	0.05	6.9	3.00	36.5	DOL
11059	0.05	6.3	3.30	36.4	DOL
11060	6.6	14	9.90	28.3	DOL
11061	13	13.9	10.00	31.5	DOL
11062	0.2	9.1	1.10	29	DOL
11063	0.03	11.3	0.00	86.4	DOL
11064	0.03	15.4	4.50	40.8	DOL
11065	0.04	1.3	0.00	50.6	DOL
11066	0.01	0.3	0.00	67.5	ANH
11067	0.01	0.4	0.00	61.1	ANH
11068	0.14	0.3	0.00	63.2	LM
11069	0.33	0.3	0.00	61.3	LM
11070	0.1	1.2	0.00	86	LM
11071	0.04	1.4	0.00	92.2	LM
11072	0.06	1.3	0.00	83.6	LM
11073	0.04	1.2	0.00	86.7	LM
11074	0.04	1.2	0.00	84.4	LM
11075	0.03	1.2	0.00	71.3	LM
11076	0.05	2.2	0.00	83.9	LM
11077	0.04	1.2	0.00	71	LM
11078	6.2	1.7	0.00	74.5	LM

Well #7104 (3300700383)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11357	0.01	2.5	0.00	97	LS
11358	0.01	1.4	15.70	78.7	DOL
11359	0.01	0.8	0.00	88.2	DOL
11360	0.01	4.6	0.00	97.9	DOL
11361	0.01	2.1	0.00	96.5	DOL
11362	0.01	2.5	0.00	96.6	DOL
11363	0.01	2.4	0.00	90.5	DOL
11364	0.01	1.2	0.00	93.3	DOL
11365	0.01	0.3	0.00	77.6	ANHY
11366	0.01	0.3	0.00	75.2	ANHY
11367	0.01	2.3	0.00	95.9	ANHY
11368	0.01	5.6	0.00	62.5	DOL
11369	0.01	3.7	0.00	64.3	DOL
11370	0.01	0.3	0.00	75.5	LS
11371	0.01	1.6	0.00	96.3	DOL
11372	0.01	0.3	0.00	71.5	ANHY

11373	0.01	7.9	15.80	21.1	DOL
11374	0.01	0.4	0.00	51.4	LS
11375	0.01	1.6	0.00	54.2	DOL
11376	0.01	7.3	0.00	55.8	DOL
11377	0.05	9	0.00	57.8	DOL
11378	0.01	0.4	0.00	53.5	ANHY
11379	0.01	0.6	0.00	37.5	ANHY
11380	0.01	0.3	0.00	75.4	ANHY
11381	0.01	0.3	0.00	75.7	ANHY
11382	0.01	2	28.00	67.3	DOL
11383	0.01	0.3	0.00	73.9	LS
11384	0.04	0.8	0.00	53	LS
11385	0.01	0.8	0.00	51.5	LS
11386	0.01	0.5	0.00	82.3	DOL
11387	0.01	8	0.00	70.3	DOL
11388	0.01	0.3	0.00	67.3	DOL
11389	0.01	0.4	0.00	62.4	ANHY
11390	0.01	0.8	0.00	60.1	DOL
11391	0.01	0.3	0.00	72.3	DOL
11392	0.01	0.8	0.00	90.4	LS
11393	0.01	0.3	0.00	71.2	ANHY
11394	0.01	1.6	35.00	42	DOL
11395	0.01	0.3	0.00	77.8	LS
11396	0.01	0.6	0.00	72.3	DOL
11397	0.01	0.5	0.00	43	LS
11398	0.01	0.8	0.00	85.7	LS
11399	0.01	0.5	0.00	85.1	LS
11400	0.04	0.3	0.00	72.3	LS
11401	0.02	0.3	0.00	66.1	LS
11402	0.01	0.3	0.00	75.5	LS
11403	0.01	0.4	0.00	57.6	LS

Well #7119 (3300700386)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11265	0.01	0.3	0.00	70.8	LM
11266	0.01	0.9	0.00	69.7	LM
11267	0.01	0.5	0.00	83.2	LM
11268	0.11	2.7	0.00	39.4	LM
11269	0.53	3.5	0.00	48.8	LM
11270	0.08	4.2	0.00	55.5	LM

11271	0.35	3.4	0.00	43.3	LM
11272	0.07	1.7	0.00	75.9	LM
11273	0.04	0.6	0.00	70.9	LM
11274	0.28	4.6	16.60	56.7	LM
11275	0.08	3.7	0.00	39.1	LM
11276	4.1	3.9	0.00	37.6	LM
11277	0.02	3.4	0.00	88.4	LM
11278	0.02	5.1	0.00	37.5	LM
11279	0.13	5.9	9.00	28.8	LM
11280	0.12	2.5	0.00	16.9	LM
11281	0.05	5	0.00	41.8	LM
11282	0.02	7.9	0.00	76	LM
11283	0.01	0.4	0.00	52.9	ANHY
11284	0.01	0.7	0.00	70.3	ANHY
11285	0.01	0.9	13.10	52.3	DOL
11286	0.01	0.3	0.00	74	LM
11287	0.01	0.5	0.00	41.5	LM
11288	0.01	1	0.00	65.2	LM
11289	0.01	0.7	0.00	63.2	LM
11290	0.01	0.3	0.00	70.3	LM
11291	0.01	0.7	0.00	61.5	LM
11292	0.01	0.4	0.00	53.4	LM
11293	0.01	1.1	0.00	58.3	LM
11294	0.01	1.1	0.00	74.8	LM
11295	0.01	0.7	0.00	87.9	LM
11296	0.34	0.7	0.00	85.4	LM
11297	0.01	0.3	0.00	70.9	LM
11298	0.02	0.7	0.00	87.6	LM
11299	0.07	0.5	0.00	86.2	LM
11300	0.01	0.5	0.00	84.4	LM
11301	0.01	0.5	0.00	82.7	LM
11302	0.01	0.5	0.00	84.5	LM
11303	0.01	0.5	0.00	85	LM
11304	0.01	0.8	0.00	87.5	LM
11305	0.01	0.3	0.00	75.9	ANHY
11306	0.01	0.3	0.00	67.5	ANHY
11307	0.01	0.3	0.00	66.9	ANHY
11308	0.01	0.3	0.00	69.7	ANHY
11309	0.01	0.5	0.00	83.7	DOL
11310	0.01	1.2	0.00	93.5	DOL
11311	0.01	0.3	0.00	75.4	ANHY
11312	0.01	0.3	0.00	69.8	ANHY

11313	0.01	0.5	0.00	90	ANHY
11314	0.01	0.3	0.00	67.3	LM
11315	0.01	1.2	0.00	92.4	DOL
11316	0.01	1.7	0.00	93.4	DOL
11317	0.01	2	0.00	90.5	DOL
11318	0.01	2.3	0.00	95	DOL
11319	0.01	1.4	0.00	93.9	DOL
11320	0.01	1.2	0.00	91.6	DOL
11321	0.03	6.9	0.00	40	DOL
11322	0.07	14.8	0.00	58.6	DOL
11323	0.04	17	0.00	76.7	DOL
11324	0.02	17.2	0.00	92.7	DOL
11325	0.02	17.5	0.00	93	DOL
11326	0.04	10.1	0.00	51.2	DOL
11327	0.01	2.3	0.00	96	DOL
11328	0.01	2.3	0.00	96.1	DOL
11329	0.01	3.2	0.00	96.6	DOL
11330	0.01	2.3	0.00	96.2	DOL
11331	0.01	2	0.00	96.3	DOL
11332	0.01	0.7	0.00	89.3	DOL
11333	0.01	1	0.00	90.8	DOL
11334	0.01	0.8	0.00	86.8	LM
11335	0.01	0.5	0.00	83.7	LM
11336	0.01	2	28.10	67.4	LM
11337	0.01	0.5	0.00	84.1	LM
11338	0.01	0.5	0.00	84.5	LM
11339	0.01	0.5	0.00	82.1	LM
11340	0.01	0.5	0.00	81.3	LM
11341	0.01	0.3	0.00	63.1	LM
11342	0.01	2.3	0.00	96.9	LM

Well #7125 (3300700392)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10972	0.12	4	0	49.5	LS
10973	0.01	8.4	2.5	47.3	LS
10974	0.27	3.8	11.4	45.5	LS
10975	1.4	12.8	20.5	15.7	LS
10976	0.04	10	18.4	14.3	LS
10977	0.01	1.6	13.8	41.5	LS
10978	0.01	7.8	2.6	10.4	DOL

10979	0.16	2.3	18.8	46.9	LS
10980	0.29	5.8	3.7	33.2	LS
10981	0.04	2.4	0	35.6	LS
10982	0.15	1.5	29	43.4	LS
10983	0.01	0.8	0	85	LS
10984	0.01	1	0	62.1	LS
10985	0.01	1	0	85.5	LS
10986	0.36	4.8	0	60	LS
10987	0.01	6	0	48.4	LS
10988	2	2	0	43.6	LS
10989	9.2	8.8	0	73.8	LS
10990	0.14	4.1	0	14.9	LS
10991	1.2	7.1	2.9	43.5	LS
10992	0.96	6.3	3.4	33.8	LS
10993	0.32	3.1	6.7	20	LS
10994	1.8	11.5	1.7	49.8	LS
10995	0.87	17	1.2	51.3	LS
10996	0.33	14.5	0	68.8	LS
10997	1.8	9.9	0	37.5	LS
10998	6.9	18.2	1.1	31.6	LS
10999	303	23.7	0.8	85.2	LS
11000	73	25.3	0.7	71.7	LS
11001	144	23.8	0.7	75.3	LS
11002	61	14.5	0	66.3	LS
11003	0.12	12.4	0	51.4	LS

Well #7283 (3300700426)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11317	0.03	0.7	0	34.9	ANHY
11318	0.04	0.6	0	41.4	ANHY
11319	0.02	0.5	0	43.8	ANHY
11320	0.01	0.5	0	47.9	ANHY
11321	0.01	0.5	0	45.1	LM
11322	0.61	0.4	0	62.3	LM
11323	0.9	0.7	0	29	LM
11324	0.05	2	5.5	22.2	DOL
11325	0.01	10.6	0	72.2	DOL
11326	1.9	2.9	0	63.4	ANHY
11327	0.13	0.4	0	63.3	ANHY
11328	0.2	0.3	0	69.2	ANHY

11329	0.01	2.3	9.5	75.7	DOL
11330	0.05	0.5	0	48.8	ANHY
11331	0.01	1.4	0	65.1	DOL
11332	0.01	0.6	0	37.4	ANHY
11333	0.01	0.9	6.9	75.2	DOL
11334	0.01	0.6	0	79.6	LM
11335	0.01	0.3	0	66.1	LM
11336	0.01	1.6	0	68.6	DOL
11337	0.79	10.5	0	25.7	DOL
11338	0.01	1.2	0	74	LM
11339	0.01	0.5	0	43.7	LM
11340	0.91	0.5	0	39.5	LM
11341	6.6	1.1	0	19.3	LM
11342	0.01	0.5	0	40.1	LM
11343	0.01	0.6	0	34.3	LM
11344	0.01	0.8	0	27.1	LM
11345	0.01	0.6	0	37.4	LM
11346	0.02	0.3	0	65.5	LM
11347	0.03	0.5	0	40.3	LM
11348	0.01	1.9	0	80.3	LM
11349	0.02	7.2	0	50	DOL
11350	0.01	7.4	2.8	53	DOL
11351	0.01	8.3	2.5	34.9	DOL
11352	0.02	7.5	0	38	LM
11353	0.01	6.5	0	47	LM
11354	0.01	3.1	0	53.6	LM
11355	0.01	2.1	0	71.5	LM
11356	0.01	0.7	0	63.3	LM
11357	0.01	1	0	64.6	LM
11358	0.01	6.4	0	42	LM
11359	0.01	6.7	0	37.8	DOL
11360	0.01	1.7	0	51	DOL
11361	0.33	7.8	0	24.4	DOL
11362	0.02	8.3	0	83.9	DOL
11363	0.03	3.8	5.6	78.6	DOL
11364	0.01	0.6	0	40.1	ANHY
11365	0.01	0.5	0	43.6	ANHY
11366	0.02	0.5	0	46.1	ANHY
11367	0.1	0.6	0	36.5	LM
11368	0.1	0.3	0	67.2	LM
11369	4.6	0.5	23.2	46.5	LM
11370	0.01	1.3	8	63.8	LM

11371	0.01	1.6	0	64.5	LM
11372	0.01	2	0	63.4	LM
11373	0.02	1	0	89.5	LM
11374	0.01	1.2	0	54.2	LM
11375	0.61	1.9	0	78.5	LM
11376	0.01	2.1	0	61.7	LM

Well #7307 (3300700433)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11764	0.04	3.5	0	62.2	LM
11765	0.06	2.7	0	80.4	LM
11766	0.05	2.1	0	70.6	LM
11767	0.11	4.4	0	45.8	LM
11768	0.2	5.8	0	65.1	LM
11769	0.07	3.6	0	63.3	LM
11770	59	18	0	50.1	LM
11771	324	29.4	0	91.3	DOL
11772	0.6	7.5	0.9	86.8	DOL
11773	103	23.5	0	82.6	DOL
11774	60	24.1	0	92.2	DOL
11775	0.07	7.1	0	80.5	DOL
11776	0.07	7.9	0	94.7	DOL
11777	0.06	0.1	0	67.1	LM
11778	0.16	0.1	0	73.5	ANHY
11779	0.02	0.1	0	74.2	ANHY
11780	0.06	0.6	0	65.8	LM
11781	0.02	0.1	0	71.5	LM
11782	0.01	0.4	0	89.1	LM
11783	0.02	5.2	0	92.9	LM
11784	0.04	1.8	0	88.6	LM
11785	0.02	0.1	0	88.4	LM
11786	0.08	0.6	0	92.1	LM
11787	0.05	0.5	0	94.9	LM
11788	0.01	0.1	0	85.7	LM
11789	0.03	1.7	0	91.8	LM

Well #7349 (3300700442)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11210	0.06	4.9	4.4	53.2	DOL
11211	0.05	4.9	10	69.7	DOL
11212	0.08	0.5	0	82.7	DOL
11213	0.09	1.1	0	62.6	DOL
11214	0.07	0.3	0	66.1	ANHY
11215	0.01	6.2	0	27.4	DOL
11216	0.04	0.3	0	69.6	DOL
11217	0.07	1	0	87.8	DOL
11218	0.06	2.7	0	96.1	DOL
11219	0.28	0.4	0	61.4	ANHY
11220	0.06	0.3	0	70.8	ANHY
11221	0.04	0.3	0	69	ANHY
11222	0.11	0.5	24.1	48.2	ANHY
11223	0.05	0.7	16.7	66.7	ANHY
11224	0.05	0.4	25.6	57.2	LM
11225	0.06	0.5	39.2	39.2	LM
11226	0.07	0.5	0	81	DOL
11227	0.23	6.2	1.7	57.5	DOL
11228	1.1	16.3	7.2	65.1	DOL
11229	0.58	0.4	0	62.6	ANHY
11230	0.16	0.4	26	52	ANHY
11231	0.04	2.3	0	96	DOL
11232	0.06	0.4	0	62.8	ANHY
11233	0.03	2.5	8.7	87.5	DOL
11234	0.03	4.7	4.7	69.5	DOL
11235	0.18	2	11	77.3	DOL
11236	0.09	1.5	0	92.6	DOL
11237	0.06	0.3	0	71.5	DOL
11238	0.08	0.3	0	71.5	DOL
11239	0.37	7.2	13.1	35	DOL
11240	0.08	0.3	0	70	LM
11241	0.07	0.3	0	71.1	LM
11242	0.06	0.5	39.5	39.5	LM
11243	0.09	1.1	50.5	40.4	LM
11244	0.55	0.3	0	67.8	LM
11245	-9999	-9999	-9999	-9999	LOST CORE
11246	-9999	-9999	-9999	-9999	LOST CORE
11247	0.14	4.2	22.2	19.7	DOL
11248	0.22	1	20.8	41.6	DOL

11249	0.1	4.3	0	39.1	DOL
11250	0.26	8.1	0	53.9	DOL
11251	1.1	9.2	1.1	67.4	DOL
11252	4.8	13.7	1.5	76.2	DOL
11253	6.3	11.8	1.7	82.3	DOL
11254	0.97	15.8	1.3	82.8	DOL
11255	3.8	15	1.3	80.2	DOL
11256	8.2	13	0	44.3	DOL
11257	6.6	15.2	3.3	44.8	DOL
11258	3.8	11.6	0.9	66.8	DOL
11259	19	10.2	2	81.4	DOL
11260	0.07	7.7	0	18.9	DOL
11261	8.7	6.6	1.6	35.1	DOL
11262	29	11.8	0.9	57.4	DOL
11263	7.3	21	0.9	79.4	DOL
11264	74	15.3	1.3	86.6	DOL
11265	2.6	18	1.1	46.7	DOL
11266	0.26	4.8	2.1	80.6	DOL
11267	0.21	1.9	0	93.1	DOL
11268	0.89	0.4	0	66.6	ANHY

Well #7351 (3300700444)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11262	0.2	7.6	7	27.8	DOL
11263	0.43	0.8	0	27.5	LM
11264	0.7	0.4	0	56.8	LM
11265	0.11	0.5	0	45.5	LM
11266	0.17	1.8	0	84.4	DOL
11267	0.11	1.4	0	93.5	DOL
11268	0.08	2	0	86	DOL
11269	13	0.4	0	53.4	ANHY
11270	0.06	0.6	0	41	ANHY
11271	0.1	0.3	0	67.9	ANHY
11272	0.06	0.3	0	69.6	ANHY
11273	0.13	0.4	0	48.6	LM
11274	0.17	0.3	0	67.8	LM
11275	0.17	0.3	0	69.1	LM
11276	0.06	1.5	0	74.7	DOL
11277	0.06	4	0	97.3	DOL
11278	0.07	0.2	0	96.4	ANHY

11279	0.07	0.4	0	66.4	ANHY
11280	0.06	0.4	0	56.7	ANHY
11281	0.25	0.3	0	71.2	ANHY
11282	0.07	0.4	0	53.2	ANHY
11283	0.08	1.7	0	80.2	ANHY
11284	0.18	1.8	0	75.4	DOL
11285	0.67	0.4	0	49.7	DOL
11286	0.07	1	0	64.2	DOL
11287	0.12	0.8	27.8	55.5	DOL
11288	0.09	0.8	14	56	DOL
11289	2.3	12.7	11	23.6	DOL
11290	4	13.2	9	22.5	DOL
11291	2.5	0.4	25	49.8	DOL
11292	0.14	0.4	26	52.9	LM
11293	123	0.3	0	67.7	LM
11294	1.1	0.9	11.6	23.1	LM
11295	0.07	0.3	0	66.6	LM
11296	0.09	0.3	0	68.2	LM
11297	0.63	0.3	0	69.6	LM
11298	0.07	1.7	0	87.6	LM
11299	0.17	4.5	0	60.7	LM
11300	0.28	6	0	48.8	LM
11301	0.14	5.8	0	54.5	LM
11302	0.13	6.9	0	44.1	LM
11303	1.3	2.8	0	45.2	LM
11304	0.14	2.5	4.3	59.8	LM
11305	0.22	3.3	0	38.1	LM
11306	0.41	7	0	47.2	LM
11307	4.9	9.9	1	46.8	LM
11308	0.35	5.6	1.9	56.1	DOL
11309	0.45	6.6	0	72.7	DOL
11310	89	22.6	8.4	32.6	DOL
11311	0.54	3.3	0	38.7	DOL
11312	0.76	20.2	0	57.2	DOL
11313	0.23	13.9	0	75.8	DOL
11314	0.71	1.6	0	81	DOL
11315	0.01	0.3	0	71.7	ANHY
11316	0.01	0.3	0	68.1	ANHY
11317	0.01	0.3	0	73.8	ANHY

Well #7438 (3300700474)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11092	0.04	0.8	0	26.1	LM
11093	0.08	0.9	0	24.6	LM
11094	0.29	0.7	0	30.7	LM
11095	0.15	2.5	0	59.7	LM
11096	0.06	1.7	0	74.6	LM
11097	0.03	1.9	0	79.6	LM
11098	24	1	0	66.8	LM
11099	0.09	1	0	62.5	LM
11100	0.05	1.9	5.7	67.9	LM
11101	0.02	1	0	64.4	LM
11102	0.03	1.4	0	63.5	LM
11103	0.02	2.1	5	50.2	LM
11104	0.02	1	10.5	42.2	LM
11105	0.07	3.5	3	35.8	LM
11106	0.34	2.6	0	16.8	LM
11107	0.06	1.9	5.8	46.3	LM
11108	0.09	9.9	1	39.5	LM
11109	0.49	10.8	0.9	50.5	LM
11110	0.68	12	11.8	33.7	DOL
11111	0.1	4.4	2.4	53	DOL
11112	0.2	10.5	0	81.8	DOL
11113	0.03	0.4	0	51.3	LM
11114	26	0.6	0	36.3	LM
11115	0.03	0.6	0	40.3	ANHY
11116	0.04	0.7	0	31.8	LM
11117	2	0.5	0	40.2	LM
11118	0.06	0.5	0	42.8	LM
11119	0.02	0.6	0	67.3	LM
11120	0.02	0.7	0	30.2	LM
11121	0.02	1.9	0	78.4	LM

Well #7776 (3300700564)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11107	0.05	0.4	0	55.4	LM
11108	0.02	1.2	0	68.3	LM
11109	0.03	2.4	0	71.2	LM
11110	0.03	2.3	0	65.6	LM

11111	0.02	0.8	0	82.5	LM
11112	0.02	2.7	4	47.8	LM
11113	0.02	5.8	0	39.3	LM
11114	0.03	3.5	3	59.6	LM
11115	0.05	2.7	0	62.8	LM
11116	0.04	0.8	25.5	25.5	LM
11117	0.22	3.4	3	30.5	LM
11118	0.12	5.9	0	42.5	LM
11119	0.04	8.6	1.2	41.6	LM
11120	0.07	8.4	1.2	32	LM
11121	9.1	15.8	0.6	27.3	DOLO
11122	0.04	7.2	2.9	23.2	DOLO
11123	1.7	7.6	1.4	36	DOLO
11124	0.04	13.6	1.5	75.7	DOLO
11125	0.04	2	5.7	57	DOLO
11126	0.03	2.8	4	79.8	DOLO
11127	0.02	0.7	0	33.4	ANHY
11128	0.22	1.2	0	74.1	DOLO
11129	0.03	0.4	0	51	LM
11130	0.02	0.3	0	66.8	LM
11131	0.02	0.6	16.7	66.7	LM
11132	0.02	1.3	8.3	83.1	LM
11133	0.05	1.7	12.6	75.4	LM
11134	0.02	1.7	6.3	63.3	LM
11135	0.02	2.1	4.9	78.7	LM

Well #7846 (3300700576)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10918	7.3	1	23.4	46.8	DOL
10919	0.72	0.8	0	59	DOL
10920	0.01	1.4	15.2	60.8	LS
10921	0.2	1.8	35.7	47.5	LS
10922	12	0.8	25.6	51.1	LS
10923	0.17	1.8	12.3	73.9	DOL
10924	1.9	2.2	9.9	69.1	DOL
10925	0.02	1	0	47.1	DOL
10926	27	0.7	0	32.4	DOL
10927	0.02	2.7	8.4	75.8	DOL
10928	0.01	1.2	0	36.5	DOL
10929	0.17	1.8	12.6	37.9	DOL

10930	1.2	5.1	0	91.7	DOL
10931	15	1.7	25.7	64.3	DOL
10932	0.01	1.6	0	55.4	DOL
10933	0.01	0.7	0	31.3	LS
10934	0.01	0.9	0	48	LS
10935	0.07	2.8	8.1	32.4	LS
10936	0.02	5.2	8.3	16.6	LS
10937	0.14	1.1	19.8	19.8	LS
10938	0.01	1.6	13.5	40.5	LS
10939	0.04	1.2	36.9	55.4	LS
10940	0.02	1.4	30.2	45.4	LS
10941	1.4	0.7	31.3	31.3	LS
10942	7	1.2	0	54.6	LS
10943	0.01	3.3	12.8	44.9	LS
10944	0.01	5.1	8.4	41.9	LS
10945	33	5.3	4	43.6	LS
10946	3.6	1.9	22.8	45.6	LS
10947	1.3	3.2	19.1	70.2	LS
10948	0.02	9.6	4.4	35.1	LS
10949	0.72	8.8	4.7	46.7	LS
10950	0.36	4.2	0	39.8	LS
10951	0.06	2.3	18.7	46.7	LS
10952	0.62	8.4	5	49.8	LS
10953	3.2	6.2	0	16.3	LS
10954	3.1	12.4	4.8	55.7	LS
10955	1	12.4	3.2	54.9	LS
10956	0.8	10.7	7.6	15.2	DOL
10957	0.09	13.8	17.5	23.3	DOL
10958	43	29.6	7.9	26.4	DOL
10959	15	15.5	10.1	32.7	DOL
10960	0.09	10.8	3.7	67.3	DOL
10961	0.01	2.6	8.4	67.4	DOL
10962	1.2	1.1	18.7	37.4	DOL
10963	0.01	1.5	14.7	29.4	DOL

Well #8026 (3300700608)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11097	0.19	1.1	0	19.7	LM
11098	0.04	2.4	0	44.5	LM
11099	0.04	2.1	46	20.4	LM

11100	0.03	2.2	24.4	29.3	LM
11101	0.03	0.9	0	48.1	LM
11102	0.04	2.1	0	61	LM
11103	0.04	5	0	39.6	LM
11104	0.1	1.9	5.6	44.5	LM
11105	0.84	9.6	1.1	34	LM
11106	0.04	12.1	0.8	41.4	LM
11107	0.04	8.2	1.2	37.4	LM
11108	0.06	8.3	0	40.4	LM
11109	0.3	8.6	2.4	36.7	LM
11110	0.11	10.2	0	46.1	LM
11111	8.7	18.3	9.4	31.2	DOLO
11112	17	20.5	13.1	44.1	DOLO
11113	13	19.1	10.4	28.6	DOLO
11114	83	21.1	11	22	DOLO
11115	34	16.2	17.1	20.7	DOLO
11116	6	16.6	12.1	18.5	DOLO
11117	34	23.9	14.7	33.2	DOLO
11118	0.01	12.2	0	76.5	DOLO
11119	0.01	13.5	0	57.1	DOLO
11120	0.03	4.9	0	82.3	LM
11121	0.02	0.5	0	43.3	ANHY
11122	0.04	0.4	0	53.2	ANHY
11123	0.02	0.6	0	36.5	ANHY
11124	0.03	0.5	0	47.1	ANHY
11125	0.02	0.8	0	54.7	ANHY

Well #8303 (3300700657)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11055	0.04	6.9	0	92.3	DOLO
11056	0.04	7.2	1.5	88.6	DOLO
11057	4.2	1.2	0	58.7	ANHY
11058	0.03	1.2	0	19.2	ANHY
11059	0.18	0.7	0	70.2	ANHY
11060	0.06	5	0	49.4	ANHY
11061	0.02	0.8	0	27.5	ANHY
11062	0.04	3.2	0	64.1	DOLO
11063	0.86	0.8	0	27.8	ANHY
11064	0.04	0.7	16.1	32.2	DOLO
11065	0.68	12.1	15.1	16.7	DOLO

11066	6.3	12.1	11.7	25.1	DOLO
11067	12	1.1	0	41.3	LM
11068	0.02	1.1	0	39	LM
11069	0.03	1.5	14.8	44.5	DOLO
11070	0.05	0.6	0	35	DOLO
11071	0.11	0.6	0	35.1	LM
11072	0.26	0.6	0	36.1	LM
11073	0.03	0.6	0	33.8	LM
11074	0.24	1.3	0	31.9	LM
11075	0.03	1.5	0	56.4	LM
11076	0.1	4.7	0	40.9	DOLO
11077	4.3	7.5	0	47.8	DOLO
11078	0.05	3.5	0	54.6	DOLO
11079	6.5	5.3	0	38.7	DOLO
11080	0.65	6.4	1.6	55.5	LM
11081	0.11	9.6	1.1	46.8	DOLO
11082	0.07	7.7	2.7	51.6	DOLO
11083	0.12	5.2	0	41	DOLO
11084	0.16	6.7	0	37.4	DOLO
11085	4.3	8.2	0	42.6	DOLO
11086	13	14	6.3	29.5	DOLO
11087	23	16.6	8.1	31.2	LM
11088	46	16	7.3	20.7	DOLO
11089	11	16.1	9.7	23	DOLO
11090	5.6	7.2	11.6	20.3	DOLO
11091	0.61	7.9	16.2	27	DOLO
11092	7.8	21.6	12.1	37.3	DOLO
11093	0.08	11.1	0	84.4	DOLO
11094	0.04	2.2	0	51.6	DOLO
11095	0.03	3.1	0	66.2	DOLO
11096	0.03	0.8	0	28.2	ANHY
11097	0.36	0.8	0	29.4	ANHY
11098	0.04	0.8	0	27.1	LM

Well #8456 (3300700686)

11030	0.01	0.5	0	38.7	LM
11031	0.02	1.7	12.5	75.2	LM
11032	0.03	2.6	4	64.6	LM
11033	0.02	1.7	6.1	60.8	LM
11034	0.72	1.3	39.7	31.8	LM

11035	0.22	6.9	0	39.2	LM
11036	0.02	1.2	0	72.6	LM
11037	0.02	1.9	5.5	54.6	LM
11038	0.02	1.4	0	74.7	LM
11039	0.02	1.4	7.9	47.2	LM
11040	0.03	4	2.6	46.6	LM
11041	0.04	7.5	1.4	38.8	LM
11042	0.06	3.4	0	31.1	LM
11043	0.07	7.7	0	32.3	LM
11044	0.03	5.2	0	37	LM
11045	3.7	2.3	0	66.1	LM
11046	0.44	7.6	1.4	44.6	DOLO
11047	0.07	10.3	1	88.5	DOLO
11048	0.04	6.2	3.4	85.7	DOLO
11049	0.02	2.7	8.1	73	DOLO
11050	0.02	0.4	0	53.1	ANHY
11051	0.03	0.3	0	68.7	ANHY
11052	0.06	0.6	0	39.2	LM
11053	0.1	0.5	23	46	LM
11054	0.01	1.4	7.6	60.6	LM
11055	0.01	1	0	63.5	LM
11056	0.01	1	0	43.6	LM
11057	0.04	1.9	11.3	67.9	LM
11058	0.01	1.2	9.1	72.9	LM
11059	0.01	0.3	0	63.3	LM

Well #9033 (3300700767)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10916	0.01	2.5	14.5	72.5	DOL
10917	0.01	1	18	72.2	LS
10918	0.01	2.1	40.3	46.3	LS
10919	0.01	1.9	18.6	55.8	DOL
10920	0.01	1.3	26.8	53.7	LS
10921	0.01	1.4	24.3	48.6	LS
10922	0.01	1.5	22.6	45.3	LS
10923	0.01	1.1	15.7	63	LS
10924	0.01	1.1	15.5	61.9	LS
10925	0.01	1.2	27.3	54.6	LS
10926	0.01	1.2	28.9	57.9	LS
10927	0.01	1.1	29.2	58.5	LS

10928	0.01	4.8	17.9	41.4	LS
10929	0.01	3.7	8.9	53.5	LS
10930	0.01	2.1	7.9	63	LS
10931	0.01	2.9	29.5	47.2	LS
10932	0.33	8.1	14.5	36.3	LS
10933	0.58	9.3	1.7	51.3	LS
10934	0.07	6.8	12	52.6	LS
10935	0.11	5.8	14.1	50.8	LS
10936	0.01	2.3	14.3	50.2	LS
10937	0.46	7.8	4.1	44.8	LS
10938	1.7	11.4	6.9	61	LS
10939	3.9	9.7	8.3	56.3	LS
10940	0.23	5.5	6.1	42.5	LS
10941	0.01	1.5	23	46	LS
10942	74	16.9	16.1	17.9	DOL
10943	320	24.9	14.1	35.1	DOL
10944	80	29.8	15.5	34.7	DOL
10945	3	23.5	17	44.9	DOL
10946	0.01	2.6	14.3	71.3	DOL
10947	0.01	7	4.8	86.8	DOL
10948	0.01	8.6	4	88.4	DOL

Well #6091 (3302500070)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11718	0.01	5	2.1	41.9	
11719	187	5.8	1.8	47.6	
11720	0.27	8.1	1.2	42.5	
11721	0.94	5.9	1.8	61.3	
11722	0.55	12.9	0.8	74	
11723	0.9	10	12.3	16.4	
11724	0.22	5	2.2	21	
11725	0.47	11.9	10.3	37.9	
11726	0.01	5.1	2.1	83.1	
11727	0.01	6	3.6	83.7	

Well #6477 (3302500113)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
10727	0.02	2.9	3.7	81.7	LM

10728	0.01	1.7	0	88.1	LM
10729	0.3	3.2	0	95.4	LM
10730	0.01	1.2	0	93.1	LM
10731	0.01	1.5	51.2	43.9	LM
10732	0.01	1.6	6.7	67.2	LM
10733	0.01	2	5.4	76.1	LM
10734	0.07	2.9	3.7	58.7	LM
10735	0.01	2.8	3.8	67.7	LM
10736	0.01	0.6	17	68.1	LM
10737	0.01	0.7	0	88.8	LM
10738	0.01	0.5	0	83.6	LM
10739	0.01	1.4	0	94.6	LM
10740	0.01	1.2	0	92.5	LM
10741	0.01	3.6	3	95	LM
10742	0.01	1.1	10.3	82.1	LM
10743	0.01	5	2.1	63.1	LM
10744	0.01	1.8	0	95.6	LM
10745	0.01	1.1	10.1	81.2	LM
10746	0.04	0.7	0	89.1	LM
10747	0.01	5.8	1.8	87.1	LM
10748	0.01	5.6	0	58.6	LM
10749	0.01	1.6	0	95.2	LM
10750	0.01	3.2	3.3	86.4	LM
10751	0.01	1.2	0	92.3	LM
10876	0.01	0.5	0	82.1	LM
10877	0.15	1.3	58.2	33.2	LM
10878	0.01	0.7	29.5	58.9	LM
10879	0.12	0.6	17.3	69.2	LM
10880	0.01	0.7	29	57.9	LM
10881	0.01	0.6	17.1	68.4	LM
10882	0.01	1	51.7	41.3	LM
10883	0.01	1.1	18.7	74.9	LM
10884	0.01	1.9	5.6	90.1	LM
10885	0.01	2	10.9	65.5	LM
10886	0.01	0.6	17.5	69.9	LM
10887	0.02	0.9	22.7	68.1	LM
10888	0.01	1.8	0	82.2	LM
10889	1.7	1.7	56.9	37.9	LM
10890	0.01	1.4	15.5	77.6	LM
10891	0.01	4	2.6	47.6	LM
10892	0.01	2.8	7.6	76.2	LM
10893	0.01	5.1	4.1	74.2	LM

10894	0.01	5.3	2	59.3	LM
10895	0.01	4.7	4.5	71.9	LM
10896	0.01	5.5	1.9	66.2	LM
10897	0.01	12.5	0	93.9	LM
10898	0.01	9.5	0	90.5	DOL
10899	0.72	3.2	3.4	60.9	LM
10900	0.01	3	3.6	50.8	DOL
10901	0.01	0.5	0	85.3	LM
10902	0.6	2	74.7	21.3	LM
10903	0.01	1.5	7.2	86.4	LM
10904	0.01	0.5	0	85	LM
10905	0.01	0.8	13.2	79.4	LM
10906	0.01	0.6	17.4	69.7	LM
10907	0.01	0.8	12.9	77.6	LM
10908	0.01	1	10.3	82.5	LM
10909	0.01	0.5	0	85.6	LM
10910	0.01	0.6	17.1	68.5	LM
10911	0.26	1.4	8.1	81.2	LM
10912	0.01	0.7	0	88.5	LM
10913	0.01	1.2	8.5	85.3	LM
10914	0.01	1.8	0	95.4	LM
10915	0.01	1.3	8.5	84.7	LM
10916	0.01	0.8	12.9	77.2	LM
10917	0.01	0.6	17.6	70.6	LM
10918	0.01	0.5	0	81.6	LM
10919	0.01	1.3	8.6	85.3	LM
10920	0.01	1.2	0	92.4	LM
10921	0.01	14	0	74.2	DOL
10922	0.01	18.7	0	76.5	DOL
10923	0.01	0.8	0	81.4	DOL
10924	0.01	2.3	0	96.4	DOL

Well #6528 (3302500119)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
12007	0.72	2.3	0	51.3	LS
12008	12	2	0	64.8	LS
12009	0.01	4.4	0	34	LS
12010	0.01	2.7	0	40.9	LS
12011	0.01	1.5	0	62	LS
12012	0.21	1	0	45.8	LS

12013	0.02	1.1	40.5	34.7	DOL
12014	6	1.2	35.2	42.3	LS
12015	32	1	15	45	LS
12016	23	1.1	30.7	36.9	LS
12017	21	1.1	14.5	48.6	LS
12018	0.04	1	14.4	43.1	LS
12019	0.01	1.1	0	76.7	LS
12020	0.06	2.2	0	77.4	LS
12021	0.02	3	0	73.8	LS
12022	6	2.1	0	72.3	LS
12023	0.03	2.2	10	59.8	LS
12024	2.1	1.4	14.1	56.3	LS
12025	0.47	1	0	54.6	LS
12026	1.6	1	0	80.7	LS
12027	0.02	1.6	0	86.8	LS
12028	0.02	1.8	0	89.6	LS
12029	0.02	1.8	12.5	74.9	LS
12030	1.3	2.2	9.2	73.6	LS
12031	0.02	1.4	9.6	76.7	LS
12032	2.9	3	9.5	76.1	LS
12033	4	2.6	10.3	82.3	LS
12034	0.02	1.6	40.6	40.6	LS
12035	0.69	7.1	25.7	51.5	LS
12036	0.35	3.1	26.8	53.5	LS
12037	0.02	1.8	1.6	22.5	LS
12038	65	9	1.2	44.4	LS
12039	6.5	6.7	1.6	32.4	LS
12040	0.25	5.6	1.3	76.3	LS
12041	0.54	5.4	1.1	36.4	DOL
12042	0.96	5.8	1.3	42.3	LS
12043	0.58	12.3	1.7	43.1	LS
12044	0.69	1.7	4.3	43	LS
12045	0.14	1	0	82.3	LS
12046	0.23	1	22.1	44.2	LS
12047	0.1	0.5	0	68.1	LS
12048	0.11	1	12.9	77.4	LS
12049	0.01	1.1	0	67.4	LS
12050	0.01	9.9	0	75.2	LS
12051	0.01	1	0	88.1	LS
12052	1.8	0.9	0	79.3	LS
12053	0.01	1.3	12	72	LS
12054	0.01	1.3	0	84.7	LS

12055	0.02	1.5	0	59.8	LS
12056	2.7	1.9	0	80.8	LS
12057	0.23	1.4	12.6	75.8	LS
12058	0.01	1.8	0	70.5	LS
12059	0.01	1.1	0	84.8	LS
12060	0.02	1.3	12.4	74.5	LS
12061	0.02	1.3	0	66.1	LS
12062	0.01	1	0	25.6	LS
12063	0.02	1.1	0	13.5	LS
12064	0.02	1.3	0	9.8	LS
12065	0.02	1	0	39.6	LS

Well #7365 (3302500152)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
12338	0.02	1.2	0	17.8	LM
12339	0.07	2.8	0	44.9	LM
12340	0.03	1.8	12.1	48.5	LM
12341	0.02	1.2	0	53.4	LM
12342	0.04	1.3	0	50.2	LM
12343	0.03	0.9	0	27.2	ANHY
12344	0.12	1.2	46	18.4	DOLO
12345	43	0.7	0	33.7	ANHY
12346	9.5	1	0	22.9	ANHY
12347	0.06	3	51.5	29.4	DOLO
12348	44	2.7	56.1	16	DOLO
12349	0.54	6.4	11.4	74.8	DOLO
12350	0.09	1.1	0	19.4	LM
12351	0.18	1	0	20.8	LM
12352	0.02	0.9	0	24.9	ANHY
12353	0.05	0.8	0	28	ANHY
12354	2.1	0.6	0	39.4	ANHY
12355	0.02	1.1	0	21	ANHY
12356	0.03	0.6	0	38.2	LM
12357	0.02	0.9	0	24.4	LM
12358	0.02	0.8	0	26.3	LM
12359	0.01	1	10.8	43	LM
12360	0.06	0.6	0	36.9	LM
12361	3.4	6.2	0	37.4	DOLO
12362	0.01	1.2	17.8	17.8	LM
12363	0.05	2	0	10.7	LM

12364	0.03	2	5.6	67	DOLO
12365	0.04	0.7	0	29	LM
12366	0.06	1	0	24.4	ANHY
12367	0.02	1	0	22.2	ANHY
12368	0.08	0.6	0	38.3	ANHY
12369	0.01	5.8	13.3	37.9	DOLO
12370	0.26	1.2	0	18.3	LM
12371	0.02	1	0	21.6	LM
12372	0.01	1.3	0	51.4	DOLO
12373	6.9	1.1	0	20.8	DOLO
12374	1.8	0.8	0	27.1	LM
12375	0.02	0.7	0	32.6	ANHY
12376	0.09	0.7	0	32.6	LM
12377	0.76	0.7	0	31.4	LM
12378	0.04	1.1	0	20.5	LM
12379	0.11	1.1	20.5	41	LM
12380	0.01	0.8	13.7	27.4	LM
12381	0.04	1.2	8.7	17.5	LM
12382	7.2	2.1	36.3	20.8	LM
12383	0.17	0.8	0	26.7	DOLO
12384	0.02	0.8	0	29.5	DOLO
12385	0.02	0.7	0	32.7	DOLO
12386	0.02	1.3	8.1	32.5	DOLO
12387	0.06	1.6	0	13.9	DOLO
12388	47	0.5	20.2	40.4	LM
12389	0.03	0.6	19	37.9	LM
12390	1.5	0.7	15.3	30.7	LM
12391	0.01	0.7	0	33.3	LM
12392	0.01	2.5	8.9	35.6	LM
12393	0.01	1.2	0	52.5	LM
12394	0.01	1	0	43.8	LM
12395	0.02	1.3	0	64.8	LM
12396	0.02	0.7	14.9	29.9	LM
12397	0.45	0.8	13.6	27.2	LM
12398	0.01	2.3	9.4	65.7	LM
12399	0.01	2.9	7.3	65.5	LM
12400	0.35	2.6	0	57	LM
12401	1.2	2.5	8.6	59.9	LM
12402	0.02	1.5	0	56.1	LM
12403	0.02	3.2	6.6	39.6	LM
12404	0.05	0.9	0	24.3	LM
12405	0.49	1.1	0	19.8	LM

12406	0.05	3.8	5.6	39.1	LM
12407	0.05	5.9	0	27.9	LM
12408	0.09	5.7	0	44	LM
12409	0.02	2.8	7.7	23	LM
12410	0.08	2.9	7.4	29.6	LM
12411	0.09	5.6	3.7	37.5	LM
12412	0.42	6.3	1.7	37.3	DOLO
12413	0.18	11.7	1.8	40.5	DOLO
12414	0.04	7.1	3	44.9	DOLO
12415	0.04	4.4	4.9	84	DOLO
12416	2.9	0.7	0	34.8	ANHY
12417	0.05	1.2	0	19.3	ANHY
12418	0.05	2.2	0	42.4	ANHY
12419	0.06	1.4	0	15	LM
12420	0.02	0.8	0	28.6	LM
12421	0.02	0.3	0	64.2	LM
12422	0.05	0.4	0	48.8	LM
12423	0.14	0.5	23.6	47.2	LM
12424	0.02	0.3	0	64.4	LM
12425	0.08	0.5	23.2	46.3	LM
12426	0.01	0.7	16.3	65	LM
12427	0.02	0.3	0	62.1	LM
12428	2.1	0.6	19.5	38.9	LM
12429	0.05	2.2	9.8	68.7	LM
12430	0.05	1.4	7.6	30.5	LM
12431	0.04	2.8	3.6	72.8	LM
12432	0.01	1.9	0	33.5	LM
12433	0.01	0.6	0	74.5	LM
12434	7	0.5	0	45.2	LM
12435	0.01	0.3	0	65.5	LM
12436	0.01	0.4	0	48.6	LM
12437	0.01	0.4	0	57.2	LM

Well #7426 (3302500158)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11476	0.01	1.1	29.7	59.5	LS
11477	0.02	2.5	53.3	26.7	LS
11478	0.01	1	0	65.8	LS
11479	0.02	1.4	23.9	47.9	LS
11480	0.03	1.5	22.4	67.3	LS

11481	0.47	0.8	0	84	LS
11482	0.01	1.2	0	85.5	LS
11483	2.5	15.3	2.1	68.7	DOL
11484	2.7	16.3	1.9	57.2	DOL
11485	0.17	13.7	2.3	66.2	DOL
11486	0.55	11.4	2.8	69.9	DOL
11487	0.25	3.2	21.9	54.8	DOL
11488	0.27	4.5	7.5	37.5	LS
11489	0.63	0.9	0	74.2	LS
11490	0.01	1.2	0	82.1	LS
11491	0.39	1.1	0	62.2	LS
11492	0.09	1.1	0	64.1	LS
11493	0.19	1.4	12.3	49.3	LS
11494	0.15	14.1	2.2	44.8	DOL
11495	1.7	13.9	2.2	53.9	DOL
11496	0.02	13.6	2.3	58.3	DOL
11497	0.01	5	6.6	78.6	DOL
11498	0.01	1.3	13.3	53.2	LS
11499	0.01	1.1	0	64.8	DOL
11500	0.03	0.8	0	86.4	LS
11501	0.01	1.6	21.4	42.8	LS
11502	0.01	1.9	17.4	34.9	LS
11503	0.4	3.2	10.6	63.8	LS
11504	0.02	4.2	7.9	39.6	LS
11505	0.01	2	17.1	57.2	LS
11506	0.01	1.7	0	38.9	LS
11507	0.09	2.6	39.5	39.5	LS
11508	0.11	1.9	0	35.9	LS
11509	0.47	4.8	6.9	48.4	LS
11510	0.06	5.6	5.9	41.1	LS
11511	0.02	3	11.1	66.5	LS
11512	0.09	1.7	20.3	60.8	LS
11513	0.19	0.8	0	81.4	LS
11514	0.01	3.2	0	85.2	DOL
11515	0.01	2.1	32.2	48.3	DOL
11516	0.01	1.4	25	49.9	DOL
11517	0.01	1.7	0	41.5	DOL
11518	0.03	1.4	0	51.5	DOL
11519	0.01	2.3	0	74.1	DOL
11520	0.07	1.1	15.9	63.5	LS
11521	0.01	0.8	0	83.1	LS
11522	0.02	1.6	50.9	40.7	LS

11523	0.01	1.5	0	89.3	LS
11524	0.01	1.1	0	62.7	LS
11525	0.01	3	22.4	56	DOL
11526	3.2	12	6.4	66.7	DOL
11527	0.12	9.7	8.4	33.5	DOL
11528	0.01	5.3	0	87.5	DOL
11529	0.02	0.8	0	80.7	LS
11530	0.07	1.8	36.8	55.2	LS
11531	0.03	2	42.1	50.6	LS
11532	0.01	1.8	37.3	55.9	LS
11533	1.1	9.6	0	65	DOL
11534	0.01	3.8	17.9	26.9	DOL
11535	0.01	2.2	0	48.1	DOL
11536	0.01	1.2	0	56	DOL
11537	0.01	10.3	6.2	28	DOL
11538	0.37	11.8	2.7	26.5	DOL
11539	1.8	9.4	14	21.1	DOL
11540	0.06	6.5	10.3	25.8	DOL
11541	0.01	1.7	20.1	60.2	LS
11542	0.01	1.5	22.7	45.4	LS
11543	0.01	1	0	66.7	LS
11544	0.11	1	0	65.9	LS
11545	0.08	1.4	0	73	LS
11546	0.01	1.3	13.4	53.4	LS
11547	0.01	2.2	15.6	46.9	LS
11548	0.01	0.9	0	74.4	LS
11549	0.01	1	0	70.4	LS
11550	0.01	1.2	0	53.9	LS
11551	0.01	1.1	0	69.8	LS
11552	0.01	2.3	44.7	44.7	LS
11553	0.01	1.1	0	62.1	LS
11554	0.01	0.9	0	76.1	LS
11555	0.01	1.2	14.8	59	LS
11556	0.01	1.7	19.3	57.9	LS
11557	0.01	1	17	67.9	LS
11558	0.29	1.7	20.3	40.6	LS
11559	0.19	1.6	20.7	62.2	LS
11560	0.06	1.2	29.3	58.7	LS
11561	0.15	0.9	0	79.8	LS
11562	0.01	1.8	16.5	55.4	LS
11563	0.08	2	17.3	52.2	LS
11564	0.02	3.3	20.7	31.1	LS

11565	0.01	5.7	0	47.1	DOL
11566	0.99	11.3	2.8	54.1	DOL
11567	0.07	4.3	7.3	86.2	DOL
11568	0.13	0.9	0	81.3	DOL
11569	0.01	0.8	0	85.8	DOL
11570	0.01	1.6	22.4	67.1	DOL
11571	0.03	2.4	43	43	DOL
11572	0.37	0.8	0	52.7	DOL
11573	0.01	1	17.1	68.4	DOL
11574	0.13	8.4	3.9	35.2	DOL
11575	0.1	10.7	3	35.9	DOL
11576	0.68	8.6	3.7	33.8	DOL
11577	0.83	10.3	3.1	40.3	DOL
11578	0.05	6.3	10.5	47.3	DOL
11579	0.01	1	0	67.2	DOL
11580	0.01	1.4	0	76	LS
11581	0.01	1.3	12.6	51.1	LS
11582	0.01	1.1	15.4	61.5	LS
11583	0.29	1.8	19	57.1	LS
11584	2.1	4.4	7.7	23	DOL
11585	5.9	3.9	8.6	51.7	DOL
11586	4.7	6.1	5.6	44.5	DOL
11587	0.04	1.2	30.2	60.4	DOL
11588	0.07	1.2	29.4	58.5	DOL
11589	0.02	0.8	0	88.5	DOL
11590	0.01	1.2	0	89.4	DOL
11591	0.43	2.8	11.9	83.2	DOL
11592	0.66	3.1	10.8	86.5	DOL
11593	0.64	2.1	15.9	79.7	DOL
11594	0.15	0.8	0	87.9	DOL
11595	0.01	1.2	0	92.2	DOL
11596	0.04	1.1	0	67.3	DOL
11597	0.01	0.9	0	83.4	DOL
11598	0.01	0.9	0	79.9	DOL
11599	0.01	1	0	73.8	DOL
11600	0.01	1	0	71.6	DOL
11601	0.18	11.7	2.7	68.4	DOL
11602	0.39	7.8	16.9	21.2	DOL
11603	0.01	2.9	12.1	24.2	DOL
11604	0.09	2.4	14.2	71.1	DOL
11605	0.03	0.8	0	83.7	LS
11606	0.02	1	0	72.4	LS

11607	0.01	4.1	8.3	33	LS
11608	0.01	0.9	0	74.1	LS
11609	0.06	1	0	71	DOL
11610	0.01	0.8	0	84.6	DOL
11611	0.05	0.9	0	81.4	DOL
11612	0.02	1.2	0	89.6	DOL
11613	0.02	4.3	7.8	78.4	LS
11614	0.07	1	17.2	68.9	LS
11615	0.01	2.2	15.8	63.2	LS
11616	0.01	3.1	10.6	63.7	LS
11617	0.01	1.4	12.7	50.6	LS
11618	0.02	1.2	0	89.7	DOL
11619	0.01	1	0	70.5	DOL
11620	0.01	1.2	0	90.6	DOL
11621	0.11	2.6	0	26	DOL
11622	0.02	5.3	6.3	62.8	DOL
11623	0.13	9.3	3.5	42.5	DOL
11624	10	5.7	17.5	17.5	DOL
11625	0.03	0.8	0	86	LS
11626	0.03	0.8	0	84.3	DOL
11627	0.02	1.2	0	59.6	DOL
11628	0.04	1.5	45.7	45.7	LS
11629	0.01	1.7	0	40.9	LS
11630	0.02	0.8	0	85	LS
11631	0.01	1.1	0	91.6	LS
11632	0.03	0.9	0	74.4	LS
11633	0.01	1.3	0	80.1	LS
11634	0.06	2.7	6.1	60.7	LS
11635	0.07	2.5	41.5	27.6	LS
11636	0.01	0.8	0	82.9	LS
11637	0.02	1.6	10.7	64	LS
11638	0.14	1	0	66.2	LS
11639	0.09	0.8	0	79.9	LS
11640	0.01	0.9	0	71.9	LS
11641	0.01	1.1	0	88.8	LS
11642	0.01	1.1	15.8	63.4	LS
11643	0.01	1.6	0	85.4	LS
11644	0.02	1.2	13.6	54.3	LS
11645	0.04	3.3	10.2	61.4	LS
11646	0.13	3.8	8.9	53.4	LS
11647	0.04	3	10.9	76.3	LS
11648	0.02	2.9	11.5	34.5	LS

11649	0.59	4.4	7.4	59	LS
11650	0.38	0.8	0	82.8	LS
11651	0.07	4	0	49.1	LS
11652	0.39	5.6	0	58.2	LS
11653	1.4	9.8	3.3	45.3	LS
11654	0.82	8.8	3.6	57.4	LS
11655	3	10	3.2	56.9	LS
11656	0.15	9.1	3.7	73.8	DOL
11657	232	21.1	1.4	84.4	DOL
11658	8.5	12.6	2.5	65.5	DOL
11659	0.03	8.3	3.9	81	DOL
11660	0.01	1.4	0	47.7	LS
11661	0.01	5.1	6.5	71.8	DOL
11662	0.02	1.6	0	46.6	DOL
11663	0.01	1.5	0	47.6	DOL
11664	0.02	1.2	0	58.7	DOL

Well #7477 (3302500162)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11812	0.09	6.1	0	55.3	DOLO
11813	0.05	2.4	6.1	42.7	DOLO
11814	0.03	3.6	0	55.5	DOLO
11815	0.04	4.2	5.5	55.3	DOLO
11816	1.8	1.7	5.2	36.3	DOLO
11817	0.33	7	1.2	28.3	DOLO
11818	0.07	3.4	12.9	16.6	DOLO
11819	0.02	1.6	13.6	54.2	DOLO
11820	0.69	1.1	6.9	41.5	DOLO
11821	0.32	0.3	29.9	23.9	DOLO
11822	0.57	1.2	0	32.1	LM
11823	17	1	0	30.5	LM
11824	0.03	0.9	21.5	21.5	LM
11825	0.15	0.9	12.7	25.3	LM
11826	0.02	1.3	7.6	30.4	LM
11827	0.03	1.1	0	59.4	DOLO
11828	0.29	4.7	15.3	30.6	DOLO
11829	0.12	0.6	14.2	42.5	LM
11830	0.03	3.1	19.1	16.3	LM
11831	0.51	0.4	33.2	13.3	LM
11832	0.06	1	22.9	22.9	LM

11833	0.01	1.7	19.7	39.4	LM
11834	0.61	1.4	3.8	76	LM
11835	0.01	1.5	2.6	47.6	LM
11836	0.01	1.2	0	39.5	LM
11837	0.02	3.8	2.8	49.5	LM
11838	0.05	4.2	3.2	44.7	LM
11839	0.17	3.2	2.7	38	LM
11840	0.1	4.1	3.6	50.1	DOLO
11841	0.16	3.8	3.1	31.4	DOLO
11842	48	17.4	10.5	46.8	DOLO
11843	18	13.6	14.8	35.6	DOLO
11844	15	14.1	12.9	22.2	DOLO
11845	11	13.3	8.6	24.5	DOLO
11846	0.07	7.6	3.1	18.7	DOLO
11847	1.9	14.8	10.9	24.1	DOLO
11848	100	21.6	8.6	53.7	DOLO
11849	2.6	15.4	12	34.7	DOLO
11850	0.04	12.1	0.7	71	DOLO
11851	0.09	3.3	7.8	31.4	DOLO
11852	0.05	1	0	89	DOLO
11853	0.02	0.7	0	33.6	ANHY
11854	0.04	5	29.2	29.2	LM
11855	0.08	0.9	0	68.8	LM
11856	0.01	0.3	0	70.2	LM
11857	0.19	1.2	13	26.1	LM
11858	0.45	1	0	30.4	LM
11859	0.03	0.9	0	41.2	LM
11860	0.29	1	0	62.1	LM

Well #922 (3302500297)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11443	0.02	0.5	55	41.2	LS
11444	0.03	2.3	15.8	47.3	DOL
11445	3.7	1.4	10	79.7	LS
11446	0.01	2.2	27.8	65.4	LS
11447	0.02	1.2	23.5	65.9	LS
11448	0.02	0.7	27.7	55.3	LS
11449	0.02	0.5	19.9	59.8	LS
11450	0.02	1	12	47.8	LS
11451	0.02	1.6	0	52.7	LS

11452	0.02	0.9	0	65.3	LS
11453	0.02	0.8	12.1	48.3	LS
11454	0.02	0.7	10.4	62.5	LS
11455	0.03	1.1	12.5	74.9	LS
11456	0.48	3.8	3.1	36.7	DOL
11457	0.01	0.7	3.3	66.6	DOL
11458	0.01	0.5	31.2	49.9	DOL
11459	0.02	0.6	14.5	58.9	DOL
11460	0.02	0.8	17.6	70.6	DOL
11461	0.02	0.7	18.9	56.8	DOL
11462	3.5	2.4	15	59.9	DOL
11463	0.02	1.4	26.5	63.7	LS
11464	0.01	0.8	0	75.4	DOL
11465	0.02	0.9	0	89.6	DOL
11466	0.02	0.8	0	85.3	DOL
11467	0.91	0.5	28.3	56.5	DOL
11468	0.5	0.6	17.1	68.5	DOL
11469	0.04	4.8	28.4	34.1	DOL
11470	0.73	0.4	0	86	LS
11471	0.02	0.7	18.5	74.1	LS
11472	0.02	0.9	0	90.3	LS
11473	0.03	0.8	23.3	69.8	LS
11474	0.01	1.7	16.5	66.2	LS
11475	0.85	0.6	12.6	75.8	LS
11476	0.16	0.5	18.2	72.9	LS
11477	0.19	0.6	16.3	65.2	LS
11478	1.9	0.5	0	87.8	DOL
11479	0.02	0.9	37.4	59.8	DOL
11480	0.02	0.8	31.5	62.9	LS
11481	0.05	8.4	3.7	80.4	DOL
11482	3.2	2.1	5.5	76.8	DOL
11483	0.15	0.6	7.3	73.2	LS
11484	0.01	1.2	43	51.6	LS
11485	0.01	0.9	30.5	61.1	LS
11486	0.33	0.7	30.9	61.8	LS
11487	0.67	0.6	30.7	61.4	LS
11488	0.02	1	17.8	71.1	LS
11489	0.03	2	5.1	82.3	DOL
11490	0.01	0.9	0	92.6	LS
11491	0.02	0.8	31	62	LS
11492	0.02	0.9	16.1	80.4	LS
11493	0.03	1.2	21.6	69.3	LS

11494	0.03	2.5	10.9	76.5	LS
11495	-9999	-9999	-9999	-9999	LOST RECOVERY
11496	-9999	-9999	-9999	-9999	LOST RECOVERY
11497	-9999	-9999	-9999	-9999	LOST RECOVERY
11498	2.7	0.7	37.6	45.1	DOL
11499	0.02	0.6	30	60	LS
11500	1.2	0.7	48.4	38.7	DOL
11501	0.01	0.5	50.6	40.5	LS
11502	2.6	0.5	50.9	40.7	LS
11503	1.7	0.6	47.3	37.8	LS
11504	0.02	1.3	42.9	51.5	LS
11505	0.02	0.7	23.5	70.5	LS
11506	0.03	2.9	27	54.1	LS
11507	0.02	1.1	30.2	60.3	LS
11508	0.02	1.4	29	57.9	LS
11509	1.9	0.7	48.5	38.8	LS
11510	1.1	0.8	51.4	41.1	LS
11511	0.01	0.7	27.6	55.1	LS
11512	0.01	1	28.2	56.4	LS
11513	0.01	1.6	34.2	54.7	LS
11514	0.08	3.5	27.1	65.2	LS
11515	0.01	4.2	8.4	67.1	LS
11516	0.01	3.5	12.7	63.6	LS
11517	0.03	1.3	23.6	70.8	LS
11518	0.02	1.5	21.6	64.9	LS
11519	0.05	2.1	21.5	25.8	LS
11520	0.01	2	8.9	53.4	LS
11521	0.05	12.1	10.2	65.5	DOL
11522	0.08	8.6	10.9	61.3	LS
11523	0.4	5.4	10.1	64.4	LS
11524	0.16	5.8	5.9	52	LS
11525	0.1	5.7	8.9	44.6	LS
11526	0.03	7.1	7.8	84.2	LS
11527	0.01	7.2	8.7	83.2	LS
11528	0.75	0.6	51.4	41.1	LS
11529	0.14	0.8	53	42.4	DOL
11530	0.02	1.1	52.6	42.1	LS
11531	0.82	0.8	51.7	41.4	LS
11532	0.01	3.7	30.7	61.3	LS
11533	0.01	1.5	0	90.6	LS
11534	0.02	0.6	18.4	73.6	LS
11535	0.03	1	15.6	78.1	LS

11536	0.02	1	23.4	75	LS
11537	-9999	-9999	-9999	-9999	LOST RECOVERY
11538	0.02	2.4	16.1	80.5	LS
11539	0.02	2.2	18.2	54.7	LS
11540	0.02	0.5	19.5	58.3	LS
11541	0.02	0.8	16	68.9	LS
11542	0.02	0.7	26.6	53.3	LS
11543	0.02	0.8	28.1	56.3	LS
11544	0.02	0.6	18.3	78.2	LS
11545	0.05	0.6	16	63.9	LS
11546	0.02	0.5	3.9	77.6	DOL
11547	0.01	1.7	1.6	77.8	DOL
11548	0.02	1.2	0	76.4	DOL
11549	0.01	0.5	17.7	71	DOL
11550	0.01	0.7	16.5	66.1	DOL
11551	0.01	0.8	17.7	70.8	LS
11552	0.02	0.5	16.3	65.1	LS
11553	-9999	-9999	-9999	-9999	NO ANALYSIS
11554	-9999	-9999	-9999	-9999	NO ANALYSIS
11555	-9999	-9999	-9999	-9999	NO ANALYSIS
11556	0.01	0.7	15.2	60.9	DOL
11557	0.01	0.7	32.2	59	DOL
11558	0.02	0.6	18.1	72.5	LS
11559	0.01	0.6	17.6	70.5	LS
11560	0.03	0.8	8.3	83.4	DOL
11561	1.5	12.5	0	40.5	DOL
11562	0.68	16	1.1	62.2	DOL
11563	0.56	19.9	0.8	62.9	DOL
11564	0.54	14.3	0.7	63.4	DOL
11565	0.02	0.6	8.6	68.8	LS
11566	1.2	10.7	1.3	50	DOL
11567	13	21.5	0.7	79.2	DOL
11568	19	26.2	0.5	94.7	DOL
11569	4.2	20.2	0.5	94.2	DOL
11570	2.7	17.9	0.7	71.3	DOL

Well #10144 (3302500361)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11636	1.84	1.8	24.7	64.6	DOL
11637	0.08	0.2	17	57.2	DOL

11638	0.714	0.6	28.6	33.2	LS
11639	4.84	0.5	42.3	30.9	LS
11640	0.02	0.7	39.6	22.4	LS
11641	3.2	0.6	36.3	43.6	DOL
11642	42	0.5	36.3	46.4	LS
11643	0.451	1.5	32.8	46.2	DOL
11644	0.03	0.3	19.6	18.2	LS
11645	0.124	0.4	21.3	50.7	LS
11646	2.2	0.4	8.2	45.2	LS
11647	0.559	1.5	20.2	43.2	LS
11648	0.02	3.3	49.5	24.4	LS
11649	0.03	4.1	49.5	33.9	LS
11650	118	4.1	17.9	43.4	DOL
11651	0.231	1.3	1.3	59	DOL
11652	21	2.5	2.5	43.8	DOL
11653	0.07	0.7	0.7	32.6	LS
11654	1.44	0.8	13.1	26.2	LS
11655	6.04	0.9	12.3	34.8	LS
11656	0.371	0.4	15.1	28.4	LS
11657	0.07	1	21.9	23.8	LS
11658	0.01	0.5	0.6	98.9	LS
11659	0.01	0.6	0	76.5	LS
11660	429	0.6	5.3	29.3	LS
11661	0.01	0.7	5.6	45.5	LS
11662	0.01	0.3	7.6	51.6	LS
11663	6.8	1.2	29.3	49.9	LS
11664	34	2.9	26.5	36.2	LS
11665	0.264	0	34.2	36.8	LS
11666	0.261	1.1	33.6	18.3	LS
11667	3.4	9.4	31.7	32.1	LS
11668	0.01	6.5	32.2	39.5	LS
11669	0.26	1.6	21.9	69.3	LS
11670	0	1.9	32.9	47.9	LS
11671	0.91	0	52	25	LS
11672	1.4	0.9	35	31.5	LS
11673	0.271	2.4	20.7	81.6	LS
11674	0.15	6	16.9	51.6	LS
11675	0.13	4.9	16.2	55.5	LS
11676	0.05	4.2	36.9	25.2	LS
11677	0.39	4.1	14.7	41.8	LS
11678	0.11	3.5	10.3	53.5	LS
11679	0.5	11.5	68.5	87.9	LS

11680	18	20.5	88.1	22.5	DOL
11681	0.9	20.5	63.4	36.5	DOL
11682	0.18	8.9	37.5	58.5	DOL
11683	0.76	2.5	22.6	48.1	SITS
11684	0.01	4.3	22.4	67	LS
11685	0.01	0.1	0	69	SITS
11686	0.01	0.2	0	62.8	ANHY
11687	0.03	0.1	0	58.2	ANHY
11688	0.34	0.6	0	25	ANHY
11689	0.03	0.8	0	24.4	LS
11690	0.341	0.6	0	24.3	LS
11691	0.36	0.9	0	32.6	LS
11692	0.42	1.3	0	35.4	LS
11693	0.96	1.2	0	46.9	LS
11694	0.01	1.1	0	77.3	LS
11695	0.01	0.5	0	79.3	LS

Well #11497 (3302500413)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11428	0.02	0.6	43	17.2	LM
11429	0.02	1.2	56.8	16.2	LM
11430	0.01	0.9	0	43.4	LM
11431	0.01	1.7	25.5	51.1	LM
11432	0.01	3.5	2	79.4	LM
11433	0.01	3.6	4.9	58.2	LM
11434	0.01	1.8	14.3	49.1	LM
11435	0.01	4.7	10.6	42.5	DOL
11436	0.01	6	15.9	51	DOL
11437	0.01	2.6	22.4	62.8	DOL
11438	0.01	2	11	54.9	DOL
11439	0.15	7.3	11.1	31.6	DOL
11440	8.4	10.9	46.4	19.3	DOL
11441	7.7	13	67.9	20.9	DOL
11442	10	14.6	67.7	14.8	DOL
11443	7.4	14.3	69.9	21	DOL
11444	31	14.8	76.1	15	DOL
11445	60	16.6	68.2	21	DOL
11446	222	23.5	55.7	26	DOL
11447	14	17.5	44.3	29.5	DOL
11448	0.01	1.9	0	25.2	DOL

11449	0.01	2.2	0	38.4	DOL
11450	0.01	4.5	2.9	87.5	DOL
11451	0.01	0.3	0	50.5	ANHY
11452	0.01	0.2	0	72.8	ANHY
11453	0.01	0.3	0	44	ANHY
11454	0.01	0.6	57.2	22.9	LM
11455	0.01	1.1	45.8	18.3	LM
11456	0.01	0.3	4.3	85.5	LM
11457	0.01	0.2	0	73.7	LM

Well #7255 (3303300069)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11004	0.01	0.3	0	72.1	ANHY
11005	0.01	1	0	92.3	DOL
11006	0.01	0.3	0	73.6	ANHY
11007	0.23	4.1	0	64.1	DOL
11008	0.03	2.7	0	66	DOL
11009	0.01	0.8	13	78.1	LM
11010	0.08	4.6	4.7	28.4	LM
11011	0.03	1.1	48.6	19.4	LM
11012	0.05	1.8	30.3	36.4	LM
11013	0.04	0.6	35.7	35.7	LM
11014	0.01	0.4	26.5	53	LM
11015	0.03	0.5	42.3	42.3	LM
11016	0.01	0.4	27.1	54.2	LM
11017	0.01	0.7	0	88.9	LM
11018	0.01	1.9	5.8	80.6	LM
11019	0.05	3.3	3.2	70.9	LM
11020	0.02	4	13.2	37	LM
11021	0.02	2.9	7.4	66.9	LM
11022	0.01	1.9	0	91.6	LM
11023	0.02	1.3	42.4	50.1	LM
11024	0.02	2.2	4.9	78.5	LM
11025	0.03	2.8	0	82.4	LM
11026	0.02	1.9	0	90.1	LM
11027	0.03	1.9	11.7	70.2	LM
11028	0.06	3.4	6.2	67.7	LM
11029	0.05	5.5	9.5	53.3	LM
11030	0.1	2.2	0	77	LM
11031	0.41	2.3	4.6	55.4	LM

11032	0.12	2.2	9.7	48.4	LM
11033	4.8	9.6	0	74.1	LM
11034	54	16.4	0	83.7	DOL
11035	0.05	1.2	0	86.3	DOL
11036	0.06	1.6	0	80	DOL
11037	0.04	3	0	95.2	DOL
11038	0.02	0.3	0	69.1	ANHY
11039	0.11	1.3	0	90.8	ANHY
11040	0.06	0.3	0	76.1	ANHY
11041	0.11	0.5	41	41	LM
11042	0.06	0.3	0	70.8	LM
11043	0.03	0.3	0	69.2	LM
11044	0.03	0.3	0	73.6	LM

Well #2584 (3305300442)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11325	-0.1	0.1	0	85.7	
11326	-0.1	0.6	0	11.1	
11327	1	1.2	0	6.4	
11328	-0.1	18.4	1	9	
11329	-0.1	4.2	0	6.4	
11330	-0.1	5.6	0.4	7.8	
11331	0.7	7.3	0.3	10.6	
11332	-0.1	2.5	0	2.4	
11333	-0.1	3.4	0	1.7	
11334	-0.1	3.3	0	2.9	
11335	-0.1	4.2	0.4	0.8	
11336	-0.1	1.5	1.4	15	
11337	-0.1	1.6	1.3	13.8	
11338	-0.1	1.4	0	3.4	
11339	0.3	0.3	7.8	62	
11340	-0.1	8.2	0.3	10.8	
11341	1	2.7	0.7	30.6	
11342	1.7	1.4	3	13.6	
11343	1	0.6	2.5	20.3	
11344	-0.1	0.5	6.1	27.5	
11345	-0.1	1.1	2.7	22	
11346	-0.1	2.9	0.6	12.6	
11347	6.3	2	0	3	
11348	-0.1	1.2	1.4	4.2	

11349	-0.1	2	1.5	10.8
11350	0.3	4.4	2.1	12.5
11351	-0.1	5.8	0	3.3
11352	-0.1	3.3	1.1	3.9
11353	0.3	3.2	2.2	6.1
11354	0.3	2.9	1.2	5.9
11355	-0.1	0.1	0	87.5
11356	-0.1	0.1	0	85.7
11357	-0.1	0.1	0	87.5
11358	-0.1	0.2	0	84.6
11359	1.7	1.2	1.6	92.2
11360	-0.1	0.9	2	93.9
11361	-0.1	0.8	13.2	81.6
11362	-0.1	1	1.7	94.9
11363	-0.1	1.6	2.9	94.1
11364	-0.1	1.2	3.3	95.1
11365	-0.1	0.2	2.9	90.9
11366	-0.1	0.6	1.6	93
11367	-0.1	0.8	1.4	99.6
11368	-0.1	3	1.1	40.7
11369	-0.1	3.6	1.1	60.7
11370	-0.1	4.9	0.4	48.8
11371	-0.1	1.3	1.5	85.8
11372	0.3	3.5	2	39.1
11373	-0.1	1.1	5.9	92.7
11374	0.3	8.4	0.4	32.9
11375	0.7	8.2	0.2	29.3

Well #6781 (3305300838)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11156	0.01	0.3	0	70.1	ANHY
11157	0.01	0.3	0	78.4	ANHY
11158	0.01	0.8	0	89.4	ANHY
11159	0.01	0.8	0	88.5	ANHY
11160	0.01	0.7	0	58.6	LS
11161	0.01	3.1	17.6	70.5	LS
11162	0.01	0.6	17.2	68.7	LS
11163	0.02	0.3	0	70.6	LS
11164	0.01	0.3	0	65.2	LS
11165	0.01	0.6	17.4	69.6	LS

11166	1.2	2.2	0	88.4	DOL
11167	0.03	2.1	0	84.7	DOL
11168	0.02	0.8	0	78.9	LS
11169	0.12	0.6	17.4	69.5	LS
11170	0.02	0.3	0	75	LS
11171	0.02	0.4	0	57	LS
11172	0.02	0.3	0	72.5	LS
11173	0	0.3	0	69.7	LS
11174	0.03	0.3	0	72.7	LS
11175	0.01	0.3	0	67.6	LS
11176	0.01	0.3	0	72.4	LS
11177	0.01	2	0	96.1	LS
11178	0.26	1.4	0	94.4	LS
11179	0.01	3.5	0	54.3	LS
11180	0.01	1.7	0	76	LS
11181	0.03	0.6	0	70.6	LS
11182	0.06	2	0	53.5	LS
11183	0.07	8.9	0	27.2	LS
11184	0.03	8.5	0	52.4	LS
11185	0.02	6.1	0	51.1	LS
11186	26	5.7	1.8	28.8	LS
11187	0.1	7.2	1.5	43.7	LS
11188	0.06	14.9	0	67.2	DOL
11189	5.9	17.1	0	95.1	DOL
11190	51	20	0	88.2	DOL
11191	5.6	22.3	0	93.2	DOL
11192	0.01	0.9	12.6	76.1	ANHY
11193	0.01	4.4	0	98.2	DOL
11194	0.01	0.3	0	69.6	DOL
11195	0.01	0.3	0	71.9	ANHY
11196	0.01	1.7	0	94.1	ANHY
11197	0.01	0.4	26.5	53.1	LS
11198	0.04	0.3	0	67.3	LS
11199	0.02	0.3	0	68.7	LS
11200	0.01	0.4	27	53.9	LS
11201	0.46	0.4	24.6	49.2	LS
11202	0.02	0.3	0	69.3	LS
11203	0.08	0.3	0	67.8	LS
11204	0.42	0.8	0	86.1	LS
11205	0.01	2.1	0	93.4	LS
11206	0.01	1.2	0	92.6	LS
11207	0.02	1.9	0	88.9	LS

11208	0.02	1.6	0	91.6	LS
11209	0.92	2.5	0	86	LS
11210	0.02	1.5	0	85.9	LS
11211	0.01	0.8	0	71.8	LS
11212	0.02	1.4	0	94.3	LS
11213	0.01	0.9	0	92.4	LS
11214	0.01	0.7	0	87.4	LS
11215	0.05	0.7	0	89.9	LS
11216	0.01	0.5	0	85.4	LS

Well #7162 (3305300929)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11152	0.08	0.5	0	44.8	ANHY
11153	0.06	0.3	0	71.9	ANHY
11154	0.1	1.3	8.4	84.2	ANHY
11155	0.08	0.3	0	72	ANHY
11156	0.08	0.3	0	65.2	ANHY
11157	0.08	2	5.7	68.1	DOL
11158	0.08	0.3	0	69.6	LM
11159	0.07	0.3	0	68.7	LM
11160	0.07	0.3	0	73.4	LM
11161	0.08	0.4	0	51.6	LM
11162	0.07	0.6	0	77.9	LM
11163	0.07	0.6	17.3	69.3	ANHY
11164	0.08	0.5	0	81.4	LM
11165	0.07	0.3	0	65.7	LM
11166	0.11	0.3	0	71.7	LM
11167	0.05	0.8	0	84.9	LM
11168	0.07	1.6	0	27	LM
11169	0.1	0.6	0	35.3	LM
11170	0.06	0.3	0	70.8	LM
11171	0.06	0.3	0	72.3	LM
11172	0.06	0.3	0	69.4	LM
11173	0.04	0.5	0	81.4	LM
11174	0.05	1.2	0	90.1	LM
11175	0.15	1.2	0	68.3	LM
11176	0.11	2.2	0	68.1	LM
11177	0.07	2.8	3.8	67.8	LM
11178	0.08	0.6	0	70.9	LM
11179	0.09	0.7	0	87.1	LM

11180	0.67	4.7	2.2	58	LM
11181	0.23	6.4	1.6	41.9	LM
11182	0.11	4.4	2	58.9	LM
11183	0.13	1.2	0	91	LM
11184	0.25	4.3	0	64	LM
11185	0.11	2.6	0	58.2	DOL
11186	0.5	7.3	1.5	86.1	DOL
11187	5.9	11.9	0.9	73.2	DOL
11188	0.1	0.9	0	47.2	DOL
11189	0.02	0.3	0	72.8	LM
11190	0.02	3.7	0	92.1	DOL
11191	0.04	0.3	0	67.8	ANHY
11192	1.2	0.3	0	67.4	LM
11193	0.04	0.6	0	82.2	ANHY
11194	0.02	0.3	0	71.6	LM
11195	0.03	0.3	0	70.7	LM
11196	0.12	0.3	0	71.1	LM
11197	0.02	0.3	0	69.6	LM
11198	0.04	0.3	0	68.7	LM
11199	0.02	0.3	0	70.8	LM
11200	0.03	0.07	0	87.5	LM
11201	7.3	1.7	0	85.7	LM
11202	0.05	2.5	0	93.1	LM
11203	0.06	1.4	0	92.7	LM
11204	0.06	2.4	4.4	62	LM
11205	0.1	4.2	0	60	LM
11206	2.1	2.3	0	54.5	LM
11207	0.05	2.5	0	68.7	LM
11208	0.05	3	0	49	LM
11209	0.24	2.7	0	63.3	LM
11210	0.08	1.7	0	63.8	LM
11211	0.04	1.7	0	77.9	LM

Well #9297 (3305301475)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11088	9.3	0.8	13.90	27.9	
11089	0.01	0.8	14.30	28.5	
11090	0.01	0.7	15.60	31.3	
11091	0.01	0.6	17.10	34.1	
11092	0.01	0.7	0.00	32.1	

11093	0.01	1.5	0.00	72	
11094	0.01	1.6	0.00	78.8	
11095	0.01	4.9	2.20	43.1	
11096	0.01	5	0.00	49.6	
11097	0.01	2.9	0.00	53.1	
11098	0.05	3.5	0.00	55.7	
11099	0.01	1.9	0.00	45.5	
11100	0.03	4.4	2.40	38.7	
11101	0.13	8.3	1.20	24.9	
11102	0.01	9.6	1.10	45.3	
11103	0.24	7.4	1.40	40	
11104	0.26	6	1.80	35.1	
11105	0.01	3.8	2.80	11.4	
11106	13	19.7	4.40	41.1	
11107	7.6	16.4	4.20	40.4	
11108	0.01	10.3	1.00	87.4	
11109	0.01	1.2	9.00	18.1	
11110	0.01	1	12.00	24	
11111	0.01	0.9	12.90	25.8	
11112	0.01	2.2	0.00	51	
11113	0.01	1.1	9.80	19.6	
11114	0.01	1	10.70	21.4	
11115	0.01	0.8	0.00	28	

Well #12107 (3305302184)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11525	0.02	1.3	0.00	65.8	
11526	0.08	3.2	0.00	70.7	
11527	0.08	3.2	0.00	55	
11528	0.18	7.1	0.00	45.6	
11529	0.14	5.3	1.80	43.7	
11530	0.12	2.5	12.40	74.7	
11531	0.1	1.1	0.00	91.6	
11532	0.43	6.8	0.00	52.8	
11533	16	14.4	0.60	81.8	
11534	71	16.5	0.60	88.7	
11535	44	15.3	0.70	92.1	
11536	8.7	12.8	3.30	46.7	
11537	28	13.7	1.30	85.5	
11538	13	14.1	0.00	88	

11539	9.3	11	2.10	69.1
11540	0.05	9.9	0.80	71.6
11541	0.07	7.6	0.00	95
11542	0.04	3.3	7.20	86.7
11543	0.03	0.3	0.00	68.4
11544	0.32	0.3	0.00	75.1
11545	0.03	0.6	0.00	58.6
11546	0.07	0.3	0.00	64.6
11547	0.08	0.9	0.00	64.9
11548	0.27	0.3	0.00	65.7
11549	0.03	0.3	0.00	74.5
11550	0.02	0.1	0.00	72.6
11551	0.04	0.6	0.00	83
11552	0.11	2.5	0.00	87.5
11553	0.06	2.4	0.00	92.8
11554	1.1	2.1	0.00	88.8
11555	1.6	3.9	0.00	57.2
11556	0.45	5.9	0.00	45.5
11557	0.07	5.4	0.00	49.1
11558	0.07	3.5	0.00	89.7
11559	0.18	4.3	0.00	51.4
11560	0.05	3.7	0.00	64.4
11561	0.07	1.5	0.00	61.4
11562	0.45	0.6	0.00	83.1
11563	5	0.7	0.00	85.2
11564	1.9	0.6	0.00	81.1
11565	0.05	0.8	0.00	82.8
11566	0.07	0.1	0.00	71.2
11567	2.4	1	0.00	59.7
11568	0.1	2.3	0.00	71.8
11569	0.14	1.9	0.00	63.3

Well #12962 (3305302336)

Depth_(ft)	Perm_Horz.	Por_Space	Fluid_Oil	Sats_Water	Lithology
11318	4.65	1.6	27.8	23.8	
11319	0.82	0.1	0	64	
11332	0.67	0.1	0	32.9	
11339	0.07	4	3.6	10.1	
11340	0.22	4.9	29.5	21.4	
11341	0.84	5	34	10.2	

11342	1.16	1.9	21.1	10.8
11345	0.25	5.3	24.1	18
11346	0.57	8.4	37	10.5
11347	24.8	6.4	22.6	12.4
11349	1.03	0.8	0	27.3
11354	0.15	0.2	0	62.9
11355	1.5	0.2	0	71.7
11356	0.01	0.1	0	35.4
11365	0.01	2.4	0	12.5
11366	0.01	2.9	0	10.3

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